THE AMERICAN GAS LIGHT JOURNAL

PUBLISHED WEEKLY, AT No. 42 PINE STREET.

VOLUME XCVIII., No. 26.
Whole No. 1,986.

NEW YORK, MONDAY, JUNE 30, 1913.

Subscription, $3 Per Year.
$4 Canada, $5 Foreign.

INDEX TO CONTENTS, PAGE 413. - - - - - - - - - ADVERTISERS' INDEX, PAGE 24.

Riter-Conley Manufacturing Company

STEEL CONSTRUCTION

Pittsburgh

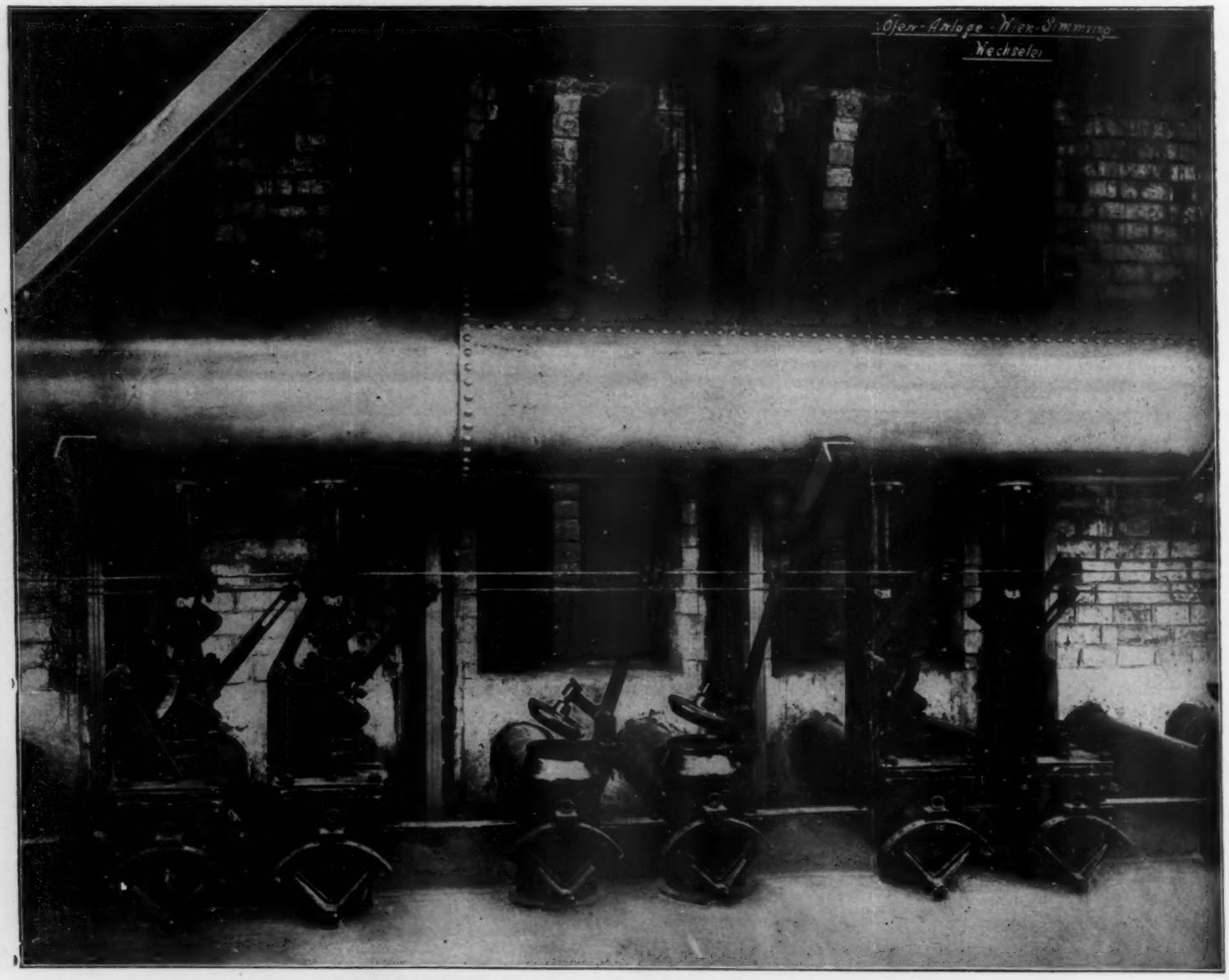
LIBRARY OF CONGRESS
513044
JUN 30 1913
SMITHSONIAN DEPOS.T.

REGENERATORS VS. RECUPERATORS.

We used to build Gas Ovens with recuperators, but the serious objections to this wasteful, inefficient method of recovering heat from the products of combustion soon led us to substitute regenerators.

If you want recuperators, we would refer you to others; but if you want to be counted among the leaders in the progress of carbonization of coal, let us demonstrate to you why we build regenerative ovens.

See our Brochures Nos. 3 and 4.



KOPPERS REGENERATORS—GAS PLANT AT VIENNA.

H. KOPPERS COMPANY,

CONSTRUCTORS OF HORIZONTAL CROSS-REGENERATIVE COKE AND GAS OVENS,

5 S. Wabash Avenue, - - - CHICAGO, ILLINOIS.

THE AMERICAN
GAS LIGHT JOURNAL

VOL. XCVIII., No 26. NEW YORK, JUNE 30, 1913. WHOLE No. 1,986.

CONTENTS.

An Asterisk (*) Denotes an Illustrated Article.

*The South Metropolitan Gas Company, London, England, by Mr. Thomas Reece 413

Proceedings, Ninth Annual Meeting, Iowa District Gas Association. 417

First Day, Morning Session—Roll Call—Welcomed by Mayor Norton—Response by Mr. G. W. Clabaugh—Report of the Council—Reports of the Secretary and Treasurer—Report of the Nominating Committee—Election of Officers—Inaugural Message—The Prepayment Meter, by Mr. Thomas Crawford—Discussion.

EDITORIALS—

Jubilee Meeting, Institution of Gas Engineers—[Special Correspondence, London, England]. 420

Briefly Told 420

June Meating, Illuminating Engineering Society, Chicago Section—June Meeting, Philadelphia Section, Illuminating Engineering Society—Current Mention.

Chamber Ovens in Small Gas Works..... 423

SPECIAL ENGLISH CORRESPONDENCE..... 424

The Institution of Gas Engineers—Progress and a Big Gasholder at Oldham.

NEW METHODS AND APPLIANCES..... 426

*A Typical Milk Pasteurizing Plant.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES..... 426

The National Incinerator Company—Some Promotion Records—The Churches are to Continue Having Free Gas—The Mayor of La Crosse (Wis.) is Summoned The Cambridge (Mass.) Company in New Offices—To Build the Pawtucket (R. I.) Company's Storehouse South Hadley (Mass.) Objects—The Consolidated (N. Y.) May Acquire the Stock—The New Baltimore (Md.) Gas and Electric Rates—Non-Suited—Mr. J. E. Kelleher Wins Out—The Tenney Voyagers Home Again—Death of Mr. Joseph R. Gilkyson—Something from Bisbee, Ariz.—Personal—Death of J. P. B. Ricketts—Personal—And Other Items.

The Market for Gas Securities..... 428

Public Lighting Table for July, 1913 (Advertising Section)..... 10

The South Metropolitan Gas Company, London, England.

[Prepared for the JOURNAL by MR. THOMAS REECE.]

The South Metropolitan Gas Company supplies with gas nearly the whole of that part of the British metropolis which is situate on the south side of the river Thames. The north side is covered by the Gas Light and Coke Company. Speaking generally, the southern district is much poorer in character than the north one, and, excepting two or three outlying suburbs, is largely inhabited by the toilers and workers of the modern Babylon. The Company supplies gas through 360,000 meters, and as 260,000 of these are of the so-called "automatic" or "penny-in-the-slot" type, it will be realized how large a section of its organization is occupied with the requirements of the working classes.

The Company's nominal capital is equal to $41,626,700, $9,477,225 of which is represented in debentures. The ordinary capital (that is, exclusive of debentures), bears interest under the conditions of a sliding scale, which is incorporated in the Company's Act of Parliament, and which this Company was one of the first to adopt as far back as 1876. His advocacy of this arrangement brought Mr. George Livesey (as he then was) into sharp conflict with many gas directors of the day; but subsequent events proved that he was right in his forecast, that the relationship between Company and consumer would be greatly improved thereby. The basis or standard price for gas is equal to 3 shillings 10 pence per 1,000 cubic feet (74 cents per 1,000 cubic feet), and with this price a dividend of 4 per cent. is allowed. For every penny per 1,000 cubic feet below the standard price at which gas may be sold, an extra dividend of 64 cents is payable on every $500 of capital, which is equal to .14 per cent.

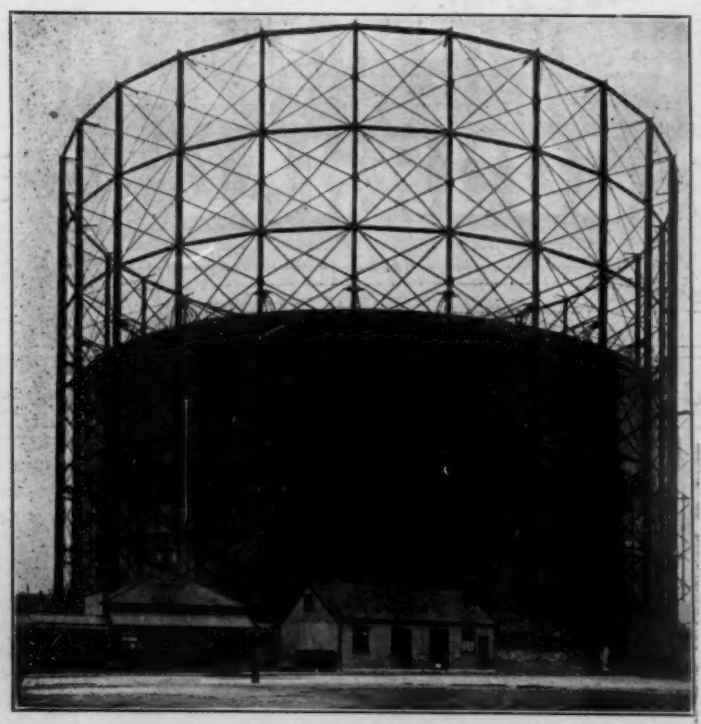
The Company's co-partnership with its workmen was instituted in 1889, and, owing to the hostility of the trades' union, brought about the gas strike which cost the Company $311,500. Since that day the co-partnership has prospered exceedingly, and almost $3,000,000 have been paid to the workmen and officials as bonus in addition to their regular wages and salaries. Much of this large sum has been invested in the purchase of shares in the Company, a considerable amount has been applied to the purchase of dwelling houses, and not a few workmen have been enabled to emigrate to one or other of the British Dependencies, and, by the purchase of farm land, to begin life again under more favorable conditions than might be possible in England. The co-partnership has been a great success with the South Metropolitan Gas Company, which has not had (in the last 21 years) a single anxiety about or difficulty with its workmen. A committee consisting of 24 workmen's representatives, and an equal number of officials, meets at intervals to discuss various matters affecting, and for promoting the welfare of the Company and its employees. Three directors are elected to the Board of Management by the employees, two of them by the workmen and one by the salaried officials, who take an equal share with those nominated by the shareholders in the conduct of the Company's affairs. The plan has been in operation since 1898, and has worked well in every way. No small share of its success is due to the fact that the best men have always been chosen; and it is satisfactory to note that, having once made their choice, the workmen have often confirmed it by subsequent re-elections. Mr. Livesey's idea in founding the co-partnership was to build up from the working men a class similar to, but an adjunct of, rather than an antagonist to, the great middle class, which has become so large a factor in the affairs of Great Britain. It is an alternative to socialism, and offers a much more satisfactory mode of dealing with what has been called the industrial problem. As an instance of the relationship which exists between the Company and its men, it may be stated that labor saving appliances are not introduced with the object of rendering it independent of labor, but only when the particular work can be carried out more effectively by mechanical means.

The site of the East Greenwich works was purchased (1881-1885) in order to provide for an increasing demand for gas which could not be met at the older and more cramped stations of the Company. In 1900 it was considered wise to purchase a still further extension adjoining the first holding before it became absorbed for other purposes. The area of the East Greenwich site is now about 150 acres.

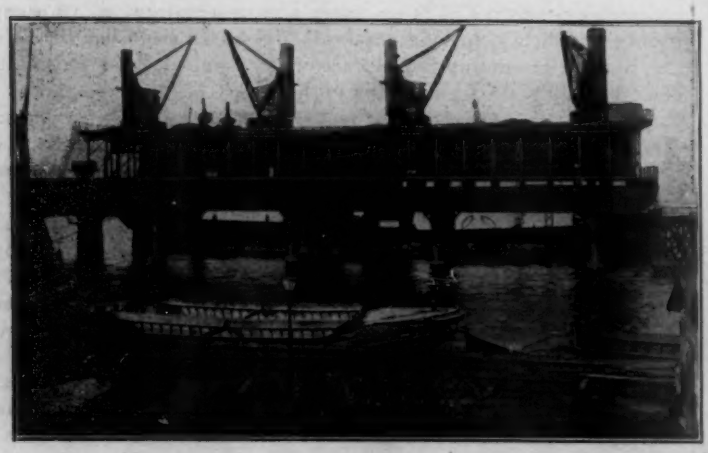
TAR WORKS AT ORDNANCE WHARF.

For the convenience of visitors a start is generally made at the tar works, where the whole of the tar produced by the Company (about 11,000,000 gallons per annum) is brought for distillation. The process is only carried as far as the primary products, it not being considered desirable at present to produce the finer chemicals or colors

The works stands on a site formerly occupied bp a manufactory of ordnance, and thus obtains its name; in fact, two pieces of ordnance may still be seen at the entrance gate. The chief apparatus of interest in the plant, is the stills, which are of the continuous type, as distinct from the ordinary intermittent pot still. There are three of these having a total distilling capacity of 55,000 gallons of tar: No. one, 16,060; No. four, 23,930; No. five, 14,960 gallons, respectively.

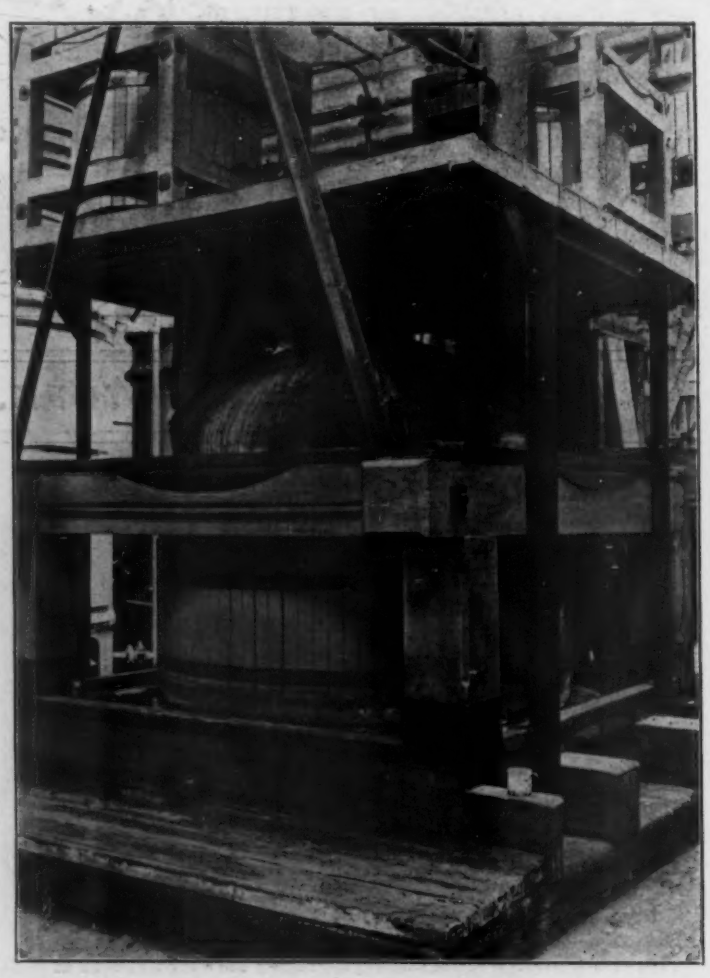


Gas Holder No. 1.

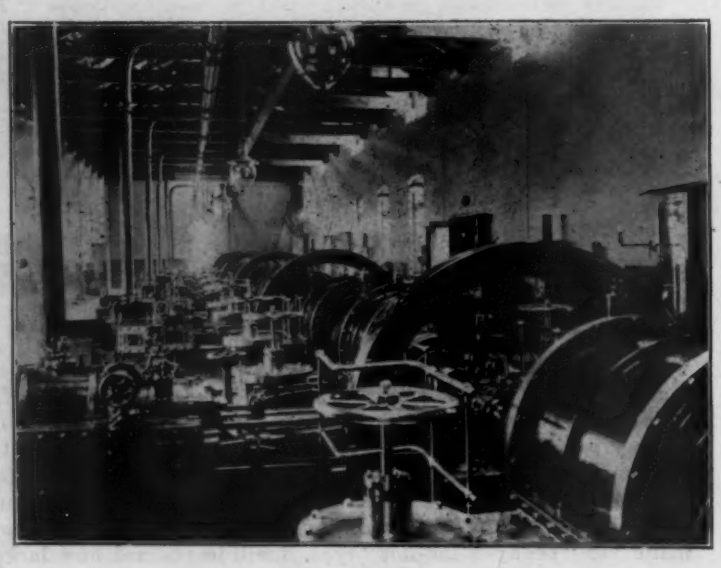


Coal Discharging Quay.

Sulphuric Acid Factory.



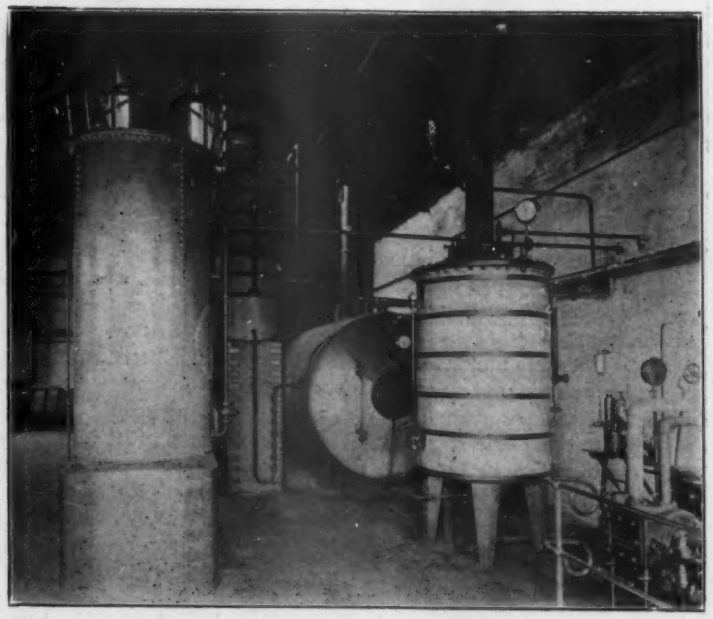
Saturator for Lampblack-or Ammonia.



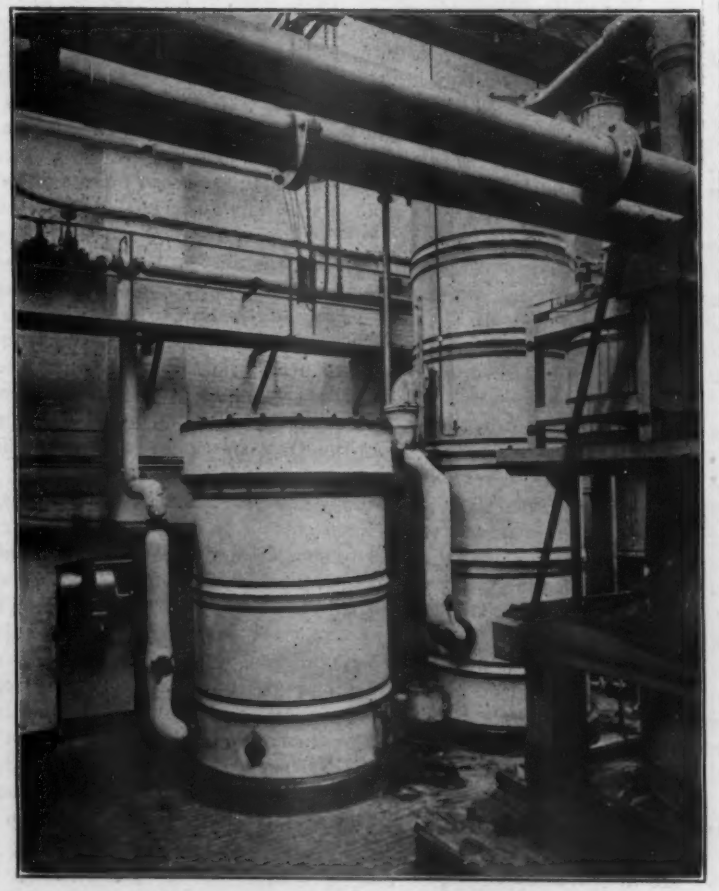
Interior of Extractor's Room.

The tar is delivered through a 9-inch cast iron pipe from the neighboring East Greenwich works, and from the other five stations it is received in tank barges. It is stored in an underground tar well of about 1,320,000 gallons capacity, and in various storage tanks where it is allowed to settle, in order to separate the ammoniacal liquor.

Each continuous still consists essentially of a coil, having a total length of about 880 yards in the case of the largest still, and a set of condensers maintained at such temperatures as to successively cool



Benzine Rectification Plant.



Boiler for Sulphate of Ammonia.

the various products of distillation. These products, except the pitch, are completely vaporzied during passage through the above-mentioned coil, which lies horizontally over the furnaces; liquid fuel being employed. It will be seen that the process employed is the converse of a true fractional distillation, and it might correctly be called a "fractional condensation." Crude tar is used as the cooling medium in the condensers, and it is thereby heated to such an extent as to dehydrate it, and deprive it of most of its light oils before it passes through the coil of the still itself. There are thus obtained the following crude products: Pitch, anthracene oil, creosote oil, light oil and naphtha. The pitch is run through steam-jacketted pipes to cooling tanks, and subsequently to the pitch "bays." The bays have a total storage capacity of about 10,000 tons. The pitch is loaded into steamers and barges by means of a Temperley transporter, capable of handling 400 tons per day. The crude anthracene is cooled out and the oil separated by centrifugals, giving a good quality of anthracene. The creosote is agitated with caustic soda solution for the extraction of phenols, which are rectified by fractional distillation, and it may then be subjected to treatment for removal of naphthalene if desired. It is, however, generally stored straight away in tanks until ready for shipment.

The light oil and crude naphthas are fractionally redistilled, to separate the naphthas from higher-boiling constituents, and the products of this distillation are agitated or "washed" with dilute sulphuric acid to remove pyridine, and afterwards with concentrated acid, to detroy impurities; the washed spirit being finally rectified to produce benzol, toluol and solvent naphtha. The crude naphthas and their products, being all very inflammable, are consequently stored in undergound tanks.

Gas Works at East Greenwich.

On entering the gas works the most prominent objects to be noted are the gasholders, of which there are two. The modern design of gasholders in England, is largely the outcome of the skill and boldness of the late Sir George Livesey. In the one erected by him at the Old Kent Road Works (1881) he made a great departure from the ordinary conditions of size and type, in constructing a holder having four lifts and holding 5½ million cubic feet, surrounded by a continuous or "bird-cage" framing, 159 feet in height. The two holders at East Greenwich were the next large ones constructed for the Company to his design.

No. 1 (erected in 1885) has four lifts, varying from 241 feet to 250 feet in diameter and 45 feet deep, and contains 8 million cubic feet of gas. A word must be said in regard to the bracing of the vertical standards of its framing. It was originally intended to have simple diagonals, fixed alternately to the front-and-back flanges of the guide standards. The late Sir Benjamin Baker, designer of the Forth Bridge, considered this bracing was not quite adequate, and in deference to his views, Sir George added the extra long diagonal ties.

No. 2 gasholder was built in 1891. The water in the ground was the cause of adding very considerably to the cost of the work, so it was decided to excavate to the depth of 13 feet only, and to carry the concrete tank 19 feet above the ground level. As the diameter of the large holder is 300 feet, and the depth only 32 feet, the holder would be difficult to guide when rising, unless special care had been taken in the arrangement of the rollers for the inner lift, by providing them tangentially as well as radially. There are 6 lifts, two of which rise above the framing. The holder has a capacity of 12½ millions cubic feet. It is worth notice that the combination of the bracing is such that it acts, not only in tension, but in compression, in accordance with the varying strains produced by the wind pressures. Sir George himself considered that the limit in the economic use of material had probably been reached in this last type, which, inclusive of tank, cost complete $25 per 1,000 cubic feet of capacity.

It is not now customary to depend upon the static pressure given by the holders for the delivery of gas through the distributing mains. The inner lift of No. 2 only balances a pressure equal to 73.66 millimeters of water. Centrifugal fans are, therefore, provided, not only to increase the pressure of gas at the inlet of the distributing governors, but to increase the rate of flow of the gas through the two trunk mains, 48 inches in diameter, by which the gas made at East Greenwich is conducted to the storage station attached to the older works of the Company.

Having, for convenience, begun at the end of the story by a visit to the gasholders, it will now be necessary to become acquainted with the beginning of it, and, for this purpose, the coal-unloading jetty must be inspected. Coal is brought from the north of England to the Works by steamers carrying from about 1,000 tons to 4,500 tons. The vessel is berthed alongside the jetty at high water, resting on the shore of the river bed when the tide is down. Four hydraulic cranes, with self-acting "grabs," perform the work of lifting the coal from the ship's hold and discharging it into store hoppers. The height from the ship's hold to the top of the hoppers is 75 feet, and the weight of the coal lifted by each grab is about 1.25 tons. The radius of each crane is variable, from a maximum of 38 feet 3 inches from the center, to a minimum of 15 feet. The cranes are operated by hydraulic power of 750 pounds per square inch, and each weighs about 50 tons. The coal is removed from the storage hoppers by

trains of 14 wagons, each holding 5 tons, and drawn by steam locomotives. The store hoppers hold 173 tons, and this capacity allows continuous working of the crane, irrespective of any irregularities in the rate at which the coal is drawn away. The jetty was originally ⅂-shaped, but has been extended in the form of a T, the older portion being generally used for the loading of large vessels with coke. It is intended shortly to add four additional cranes to the newer end so as to enable two ships to be unloaded simultaneously.

The retort houses next claim attention. It is intended that these shall be in blocks of four, the first set of which is erected and at work. A commencement has been made with the second block, the first house of which is built and partly occupied. It will be noticed from the plan that the structures are designed to be parallel with the river, and at right angles with the elevated railway which runs from the jetty. This affords ready and economical means for supplying each section with coal, and for the transport of the coke and breeze produced in the process of manufacture. The retort houses are 485 feet long by 71 feet wide. The capacity of each coal store is about 6,600 tons. The retort houses consist of 45 settings, contained in three benches of 15, each with 10 retorts in a setting. The section in general use is Ω-shaped, but the last renewals have been made with retorts of elliptical section, which plan affords increased facilities in working.

The stoking machinery in all the retort houses, consists of the Foulis-Arrol chargers and the Hunter-Barnett dischargers, worked by hydraulic pressure. The retorts are 30 feet long, exclusive of the cast iron mouthpiece, and their cross section is about 21 inches by 15½ inches. Each charge consists of 11 cwt. (1 cwt. = 112 pounds), the duration of carbonizing being 12 hours. The time of charging a retort is 40 seconds and of discharging 20 seconds. The gas produced averages in quantity 12,600 cubic feet per ton of coal, has a calorific value of 587 B.T.U. per cubic foot, and an illuminating power of 15 candles by the No. 2 Metropolitan argand, which is the official testing burner. This is equivalent to 16.65 Hefner candles, with gas burning at the rate of 5 cubic feet per hour. The coke and breeze sold make about 50 per cent., by weight, of that of the coal carbonized. Most of the groups have a single furnace on each side, but in the later type, each double furnace heats three complete groups, with economy of fuel and labor. It should be mentioned that the present stoking machinery has recently displaced power rakes, and scoop chargers actuated by a high speed wire rope. With the use of power rakes and scoops a good deal of wear-and-tear takes place, and the whole of the retorts are not at present in the best condition for the use of "pushers." But this defect will be gradually eliminated as time goes on and the retorts are rebuilt.

German made retorts are used at these, as in other works of the Company, and it must be conceded that they last longer, and keep their shape better, than the homemade production. It is, however, hoped that the knowledge of this fact will put British manufacturers on their mettle, and that they will soon manufacture retorts as good as the imported ones. The clinkering and adjustment of the furnaces, are done from a tunnel under the center of the series, which allows the various operations to be conducted irrespective of the stoking of the retorts, in the course of which large quantities of red hot coke are drawn into the retort house vaults, and there quenched, prior to being loaded up into wagons. These wagons are then pulled out by means of steam locomotives, and the trains of coke either loaded into barges or conveyed to the store heap.

The flow of gas from the crude gas main, is controlled by equilibrium governors of a simple type, and the regularity of the exhaust is registered by continuously working gauges. Condensation is effected by a combination of air and water cooled condenser, the first portion consisting (for each retort house) of a coil of pipe 36 inches in diameter and 1,509 feet long. The water cooling is carried out in alternate chambers of gas and water, about 6 feet high by 10½ inches wide, through which gas and water flow in opposite directions.

The exhauster house contains 6 sets of engines, each working 2 exhausters, and provides a margin of 50 per cent. over winter requirements. The engines are of the well-known "Farey" type, compound horizontal, and steam-jacketed. The peculiarity of their design is that the front and back crossheads are coupled up, by means of stiff side rods which relieve the cylinders from much of the dead weight of the pistons. The engine dimensions are: High-pressure cylinder, 9 inches diameter; low-pressure cylinder, 14½ inches diameter; stroke, 18 inches. Similar engines are used for driving the tar, liquor, and water pumps by means of belting.

The washing plant consists of Livesey washers, worked three in a set, through which the gas passes in series. The vessels are placed at different levels, so that the ammoniacal liquor, which comes from the scrubbers, flows through them without pumping. Scrubbers are provided in sets of two or three, clean water being used to extract the final traces of ammonia. The scrubbers are filled with wooden boards, 11 inches deep, ¼ inch thick, and with ¾ inch spaces between them. This arrangement (devised by Mr. Livesey many years ago) provides a large surface for the extraction of the gaseous impurities. The dry purifying plant was originally laid out for the reduction of sulphur compounds by the lime process, and is in sets of six. The first four vessels work in rotation, and in these lime was used; the last two, charged with oxide of iron, were required for the complete purification from sulphureted hydrogen. The purifiers are 70 feet long, 30 feet wide and 5 feet deep. The cover is lifted sufficiently high to provide a protection against weather to the men, when charging and discharging them, so as to save expense; only sufficient covering to the plant is provided for the storage of the materials used, oxide of iron or lime. A Livesey washer is provided to the outlet of each set of purifiers for napthaline extraction.

The station meter drums work in concrete tanks fixed below the ground level, and provided with light, wrought iron roofs.

Acid and Ammonia Works.

The chemical works, occupying an area of about 3 acres, is situated at the southern extremity of the gas works, having a river frontage of about 250 yards. It consists of a sulphuric acid and sulphate of ammonia plant. The acid works is on the well-known chamber system, in 4 units, capable of producing 61 tons, of 1.620 specific gravity acid, per day. Each unit consists of spent oxide kiln, Glover tower, 10 feet by 8 feet by 30 feet high, 4 chambers, each 110 feet long, 20 feet wide, 16 feet 6 inches high, and a Gay-Lussac tower, 11 feet by 8 feet by 40 feet high. Seven tons of spent oxide, containing 45 to 50 per cent. of sulphur, are used in each kiln per day, and the necessary heat of the kiln is maintained by the combustion of the sulphur. Nitrous oxide (the oxidizing agent) is produced from nitrate of soda, 28 pounds being used per ton of acid. The function of the Glover tower is chiefly to denitrate the acid produced in the Gay-Lussac tower, and to concentrate the weak chamber acid. After the acid gases pass thpough the chambers, and the sulphuric acid is formed, the nitrous oxides are absorbed in the Gay-Lussac tower, by means of cold, strong, sulphuric acid. The acid required for the working of these towers is forced to the top by pumps and air compressors working at 4.7 atmospheres. The four Gay-Lussac towers are connected to a large absorption tower, 15 feet by 15 feet by 30 feet high, where any nitrous oxides passing from the Gay-Lussac are absorbed. The draught on the apparatus is regulated by a fan.

An acid concentrating plant is attached to the acid works, for concentrating chamber acid up to 1,840 specific gravity, for commercial purposes. This plant, which is on the Kessler system, consists of a gas producer for supplying heat, a "saturex," where the hot gases come into contact with the acid, and the recuperator trays where the acid is admitted. These trays and "saturex" are made of volvic lava stone, cemented together with silicate of soda and volvic sand, and incased in a lead lining. The vapors from the exit of the apparatus pass through a condenser in order to absorb any acid substances. The heating gases are drawn through the apparatus by means of an air-fan, running at 1,500 revolutions per minute, acting on an injector, thereby causing a vacuum of 6 inches of water. From 4 to 8 tons of acid, according to the strength required, can be concentrated per day.

In the sulphate of ammonia plant two units are completed, capable of making 43 tons of sulphate of ammonia per day from liquor containing 1.7 per cent. of ammonia.

The ammonia liquor is measured in 4 cast iron, rectangular tanks, with a total capacity of 150,000 gallons, equal to 24 hours' storage. The liquor is pumped from these tanks to the superheaters, where it is heated by the hot gases from the saturator to nearly boiling point before entering the stills. These superheaters serve the double purpose of cooling the saturator gases, as well as heating up the ammoniacal liquor.

Each unit deals with 70,000 gallons of liquor per day, and has 2 stills, 6 feet in diameter. The free ammonia is driven off in the first still, the liquor passing downward through superimposed trays of peculiar construction, until it meets the hot milk of lime in the chamber fitted with lead, which forms the box of the still. It is then passed forward to the second still, where the fixed NH_3 salts are decomposed, assisted by further agitation with steam. The waste

liquor, before passing to the settling ponds for the purpose of depositing the sludge, is passed through a superheater in which the temperature of the boiler feed water is raised to 71° C. The ammonia from both stills passes into the saturator, 7 feet in diameter, where it meets the sulphuric acid. The acid and the ammonia combine to form sulphate of ammonia, which crystallizes, and falls into the well of the saturator; from which it is ejected by a steam jet, into the centrifugal machine. It is then dried, the mother liquor running back to the saturator, and the crystals (falling from the centrifugal by the bottom discharge valve) are then elevated and conveyed into the stores. The saturator in No. 1 plant is 8 years old, and has made 47,000 tons of sulphate of ammonia. The sulphureted hydrogen evolved in the process is cooled, and conveyed to the acid plant, for conversion into sulphuric acid. The engine is of 70 horse power, with cylinders 12 inches and 22 inches in diameter, with 26-inch stroke. It drives the liquor pumps, river water pumps for cooling the saturator gases, boiler feed pumps, centrifugals, elevating and conveying machinery for both units.

The boilers are six in number, each 8 feet in diameter, 27 feet long, consuming coke breeze. The steam is delivered at 5.4 atmospheres, and is reduced to 1.4 atmospheres before entering the liquor stills.

The stores are capable of holding upwards of 4,000 tons of sulphate of ammonia, and from there it is elevated into the overhead hoppers of the bagging room, where it is put into the bags and weighed. The bags are put on a "slat" conveyor, and carried to the loading wharf, automatically counted, and put into barges.

PROCEEDINGS, NINTH ANNUAL MEETING, IOWA DISTRICT GAS ASSOCIATION.

HELD AT BURLINGTON, IA., MAY 7-9.

FIRST DAY—MORNING SESSION.

The Iowa District Gas Association convened in ninth annual session, in the banquet room, Hotel Burlington, Burlington, Ia., the morning of May 7th. The President (Mr. Campbell W. Fair) occupied the Chair. The following were in attendance:

ROLL CALL.

Bertke, W. J.	Haar, D. C.	Oster, E. A.
Bentzinger, D. D.	Haff, H. G.	Parker, J. F.
Burlingham, E. H.	Hansen, C.	Phillips, C. O.
Beebe, T. R.	Harbison, C.	Potter, J. L.
Bennett, H. E.	Hanschildt, C. J.	Potter, H. W.
Bowman, W. G.	Harmount, C. M.	Pratt, E. G.
Brown, E. D.	Harvey, J. G.	Pratt, E. G., Jr.
Brzeskowski, F.	Huffaker, H. B.	Ryan, F. W.
Burg, J. L.	Hutchinson, W. P.	Ritchey, R. J.
Carter, A. W.	Innes, J. A.	Rockstroh, C. W.
Chisholm, C. C.	Keller, A. E.	Rooke, T. E.
Clabaugh, G. W.	Kellogg, L. L.	Runner, R. K.
Clark, H. F.	Kelsey, F. P.	Sanders, W. W.
Clark, J. C.	Kellum, B. J.	Schall, H. D.
Clary, E. D.	Kennedy, J.	Skellenger, H. B.
Cole, E. C.	Lambert, E. L.	Sliben, E. C.
Crawford, T.	Leakey, N. G.	Smith, C.
Davis, W. E.	Lenney, D. G.	Smith, C. S.
Donelan, J. J.	Long, R. J.	Smith, H. M.
Eaking, L. R.	Lockwood, G. W.	Smith, J. P.
English, A. L.	Lucena, J.	Smyley, A. L.
Falvey, E. C.	Martin, J. F.	Spear, C. C.
Feat, J. G.	Martin, E. H.	Stevenson, H. C.
Foley, W. F.	Maynard, H. R.	Stillson, H. G.
Forbes, G. W.	Merke, R.	Strain, J. R.
Gallatin, J. B.	Mason, A.	Swan, G. L.
Genay, T. B.	McCarthy, E. A.	Vickers, W. L.
Goss, A. J.	McCandless, G. E.	Vincent, G. I.
Grant, T. E.	Miller, B.	Wardell, C. W.
Green, W. S.	Miller, L. B.	Warnick, J. A.
Griffin, J. F.	Murray, C. W.	Weisgerber, E. C.
Guitteau, W. S.	Otterbeink, D. J.	West, W. D.

WELCOMED BY MAYOR NORTON.

The President introduced Hon. F. C. Norton, Mayor of Burlington, who thus welcomed the Association:

Mr. Chairman and Gentlemen of the Convention: A few moments ago I remarked to Mr. Clary that this most prosperous-looking gathering is one of the very best arguments favoring 90-cent gas. He informed me, however, that the boys had on their best bib-and-tucker, and that were I to see them a few days hence, they would be going along the streets with their hands filled with tar. My friends, in behalf of the citizens of Burlington, it affords me great pleasure to welcome you here. Let me compliment you on your wisdom in selecting Burlington as your meeting place, for nowhere else in the entire Mississippi Valley will you find a better managed gas plant than right here. Further, in no other place in the entire country will you find more competent, efficient, obliging, accommodating, courteous, affable, pleasant gentlemen than the men in charge of our gas plants.

There was a time when city officials, desiring to strike a popular chord, would require public service corporations to do unreasonable things, or would even attack their honesty of purpose. Also, when city officials so craved power in their desire for retention of, or advancement in office, that personal characters were assailed, should such attack seem likely to accomplish their purpose. But, thank heaven, the American people, the great lovers of fair play that they are, have gotten on to their grandstand plays, and to-day, public sentiment concedes that public service corporations are entitled to a fair return upon the money invested. Public service corporations, by the very nature of their investments, are more vitally interested in the progress of their respective cities, will profit more by the growth thereof, and likewise will suffer more by the retarding, than any individual, firm or private corporation. A mercantile establishment can, without material loss, leave a city that is not growing and prospering, and go to some wide-awake place; but a public service corporation, with hundred of thousands of dollars buried in the streets, is absolutely helpless. Consequently, putting aside all patriotic motives, and attributing only selfish purposes, you are more vitally interested in the advancement and prosperity of your respective cities than are men engaged in any other line of business. I realize you have considerable business to transact, and my time is also limited. We have an efficient committee to take care of your every want during your stay in Burlington, and I know they will look after you. However, should any of you men be overlooked or get into trouble, my telephone number is 133. Use it freely and we will see that you are put right.

RESPONSE BY MR. GEORGE W. CLABAUGH.

At the suggestion of the President, Mr. George W. Clabaugh Vice-President of the Omaha Gas Company, thus responded to the Mayor's message of welcome:

Mr. Clabaugh—Mr. Chairman, your Honor and Gentlemen: I am delighted we found the Mayor in lighter vein this morning, hence I know I can tell him we came here in our best bib-and-tucker, in that we knew of the wonderful prosperity of Burlington, and also of the cleverness of her Mayor. But had we come here in working clothes, to find him dressed, as he is to-day, in the height of fashion, we certainly would have felt out of place. So, out of compliment to him, we have done our best. Where we have had only a dollar to spend, we have spent but a dollar; if we had more, we spent more. Gentlemen: To my mind, we have listened to a talk this morning that is one of the most interesting it has been my pleasure to hear for many a day, from the chief executive of a city. The honorable gentleman who has just addressed us, looks upon the right side of the city's progress, the side of his copartners, the public service corporations of his city; for without such copartnership and unanimity of work and feeling, no city can prosper, nor, as the Mayor has said, can its corporations prosper. We, knowing what Burlington has done, admit that one reason she has done so well is because at the head of her institutions is a man worthy to be her chief executive. The possibilities of this beautiful city, lying alongside the Father of Waters, are something remarkable. In fact, it will be merely a matter of time when Burlington will not only equal in size any other city on the Mississippi, but certainly will stand at the head-and-front of many of them. Burlington is one of the oldest cities in this western country, and, without question, has some of the best and ablest men to be found anywhere. It is an inspiration to us to hear the chief executive of a city say that the public utility corporations have some rights which are only commensurate with what they do for the people, and what the people do for them. Gentlemen, our light is not hidden beneath a bushel; it is burning bright, that every one may see. There are no secrets in the gas business nor in the business of any other public utility corporation, and it was one of the greatest mistakes that the world ever knew, to make any one believe that there was ever anything to be hidden. The people in the end get what they want, and with such a leader as Burlington has to direct her, we have no fears. The newspapers are always ready to say the right thing, if they are given the right lead in the beginning. When a newspaper man visits you, and you have anything to tell him, say

it openly and aboveboard, for if you don't give him the correct information the reporter will make up his "spiel." I must compliment Mr. Clary and his co-workers in this city, that they are living in a place whose chief executive knows and understands, and is fair, and willing to help along the prosperity of their business. Mr. Mayor, on behalf of the Iowa District Gas Association, I thank you most heartily for your very kind reception. We expect to enjoy ourselves during our stay here, and know that we will, from the very kind and cordial welcome that you have given us. [Applause.]

The President said that as the minutes of the previous meeting had been published, the reading thereof would be dispensed with. He then called for

THE REPORT OF THE COUNCIL,

which was this:

The Council met at the Des Moines Club, at Des Moines, Ia., Feb. 4th, 1913, with Messrs. Fair, Maple, English and Vincent. Messrs. Kellogg, Burt, Clary and Haines were also present. It was decided to hold the annual meeting at Burlington on May 7th, 8th and 9th. Mr. Clary reported that headquarters would be in the Burlington Hotel, and that the entertainment would consist of a boat excursion on the Mississippi, from Burlington to Keokuk, Thursday; luncheon and one business session to be held on the boat. An entertainment would also be provided at the Garrick Theater for the evening of the 7th. Messrs Borden, Crawford and English (Chairman) were appointed a Finance Committee. The following papers were assigned to be read at the meeting:

"The Prepayment Meter," by Mr. Thos. Crawford, Clinton.

"The Welfare of the Employee," by Mr. G. W. Clabaugh, Omaha, Neb.

"The Operating of a Storeroom," by Mr. W. H. James, Waterloo.

"Recent Developments in Industrial Appliances," by Mr. E. C. Weisgerber, Cedar Rapids.

"The Oil Situation," by Mr. E. G. Pratt, Chicago.

"Advertising," by Mr. F. P. Kelsey, Chicago.

"Improving Operating Conditions for the Small Works," by Mr. Howard Stillson, Boone.

"Reducing Boiler Fuel in Water Gas Manufacturing," by Mr. T. B. Genay, Des Moines.

"Some Distribution Experiences," by Mr. W. H. Merritt, Fremont, Neb.

The resignation of Mr. J. C. Grey, as a member of the Council, was received and accepted, and Mr. W. H. Taylor, of Omaha, elected to fill the vacancy.

The resignation of E. M. Walker, as a member of the Council, was received and accepted, and H. B. Maynard, of Waterloo, elected to the vacancy. There being no further business, the meeting adjourned.

The Council met at Burlington, Iowa, the 6th inst., with the following members in attendance: Messrs. Fair, Clabaugh, English, Crawford and Vincent.

Applications for membership were received and approved, as follows: Active membership, 20; associate, 11; dropped from roll, 12; resigned, 7.

Messrs. J. E. Shuff, E. Davis and H. G. Stillson were appointed as the Nominating Committee.

The invitation from the Panama Pacific Universal Exposition to hold the 1915 convention of the Iowa Association in San Francisco was received and ordered laid before the convention. The invitation from the American Gas Institute to appoint a representative on the joint committee of all Gas Associations on the Gas Congress at San Francisco in 1915, was received and ordered laid before the convention. Formal approval was made of extending privilege of the floor of the convention to a representative of the National Commercial Gas Association to present the plan of the National Advertising Campaign. A letter from Mr. G. G. Ramsdell, Secretary of the American Gas Institute, expressing his regret over his inability to attend the convention, was received.

There being no further business the meeting adjourned.

The President then called for the

REPORTS OF THE SECRETARY AND TREASURER,

which were as follows:

As Secretary, Mr. Vincent reported:

The work of the Association having been covered in the reports of the Council, only a brief report will be made. Here following the idea outlined in the report of 1912, the "Proceedings" of the 1912 Convention were published in pamphlet form and distributed to the members shortly after the meeting. This was more or less of an experiment, and, as it was found to be within the means of the Association, the publication will be continued. It is expected to materially improve the publication this year, and it will also be published, as last year, by the AMERICAN GAS LIGHT JOURNAL. Your Secretary has continued the effort to interest the unaffiliated companies in the territory covered by the Association. A system of follow-up letters was used and an unusual number of responses were received. Your Secretary wants particularly to thank your President, also a number of our appliance friends, for these new companies. This combined effort has resulted in the addition of 18 active and 11 associate members to your Association.

As Secretary, these facts were presented:

Cash on hand May 22d, 1912	$176.36
Received during year from all sources	461.90
	638.26
Expended during year	449.49
Cash on hand May 7th	$188.77

A certificate from Mr. S. L. English, as Chairman of the Auditing Committee, certifying to the accuracy of the figures given, was appended.

At the request of the President, Mr. W. E. Davis read the following

REPORT OF THE NOMINATING COMMITTEE.

Mr. Davis—Your Committee desires to place in nomination the following officers for the ensuing year:

President—Mr. B. C. Adams.
First Vice President—Mr. H. C. Blackwell.
Second Vice-President—Mr. Thomas Crawford.
Secy.-Treas.—Mr. G. I. Vincent.
Members of Council—Messrs. A. L. English, E. W. Eustace, R. M. Parker.

Respectfully submitted,
WM. E. DAVIS,
J. E SHUFF,
H. G. STILLSON,
} Committee.

ELECTION OF OFFICERS.

On motion of Mr. J. H. Warnick, the report of the Nominating Committee was accepted, and the Secretary was instructed to cast the ballot of the Association for the persons named as officers of the Iowa District Gas Association. He subsequently reported the instructions had been carried out.

Vice President Crawford assumed the Chair and President Fair read his

INAUGURAL MESSAGE.

[For the text of the message see *ante*, page 333.]

The Chairman remarked that they had listened to an unusually good address, and that he would appoint, as a committee thereon, Messrs. Haines, McLean and Kellogg.

The President introduced Mr. Thomas Crawford, who read the following paper on

THE PREPAYMENT METER.

No other device has been added to the equipment of modern gas companies which has caused as much discussion as the prepayment meter. I am a thorough believer in its virtues, and, as a result of my belief in it, out of 4,600 meters installed in Clinton, 2,800 are prepayment; and out of 820 meters in Maquoketa, 620 are of the prepayment type. Their principal feature, in adding small consumers, is that they drop a coin in the meter, buying and paying for something tangible, the same as for groceries or any other commodity. If gas is being wasted, the waste is quickly detected and stopped, and if much of a leak develops, escaping through the partitions and out at the top of the house, where the odor can not be detected readily, it is quickly discovered. Statements as to the consumption on appliances installed are easily verified by the consumer on his own premises with a prepayment meter. A consumer always has his bill paid, the company always has the money and no deposit is asked to guarantee the bill. The prepayment meter will also drive from your office on discount day the chronic faultfinder. One person in line finding fault naturally induces other people to feel the same way, and our answer to this class of complaint is, "Put in a prepayment meter, and use as much or little gas as you choose. No corporation or individuals except public service companies have to extend credit to everybody indiscriminately; but with us, a meter is set, the consumer is told to

help himself and use all the gas he needs or wants to, the company waiting from 30 to 45 days for payment. When moving day comes we naturally have a lot of meters to take out and reset. When they have prepayment meters installed this proposition is much easier, because if one moves out without notifying us, and some one else moves in, we are always able to collect the bill; which is not always so with the ordinary meter. The prepayment meter is especially adapted to consumers whom you do not care to trust on ordinary meters, and whom you can afford to serve through a prepayment meter; and it reduces the work and cost of office expense and collections. Some time ago, when we had about 2,500 meters, all but 75 of which were ordinary meters, our delinquent list of unpaid bills, on the 15th of the month, would run from 300 to 350. Now, with 4,600 meters, our delinquent list for the month of March was 120. We have tried to get a lot of the people who used to be delinquents to try the prepayment meter, and have practically doubled our business and cut our unpaid bills in half.

The statement that prepayment meters result in decreased sales, comparing the average consumption per meter on ordinary and prepayment meters, is misleading, because invariably people who are large gas consumers for cooking and lighting, or industrial purposes, prefer the ordinary meter; and working people in moderate circumstances, and the smaller stores, insist on having the prepayment meter, lowering the average consumption on such meters. Among the objections advanced against the use of the prepayment meter are: The cost of the meter; cost of maintaining and repairing; danger of asphyxiation; robbery; general cost of handling, etc.

Regarding the cost of the meter, let me say that while its cost is about $2.75 more than the ordinary one, this amount could easily be lost in one month's failure to collect from an average consumer. As to repairing and maintaining, our experience is that it costs but a trifle more than to repair the ordinary meter, for the prepayment device seldom gets out of order.

Regarding danger from asphyxiation. We never set a prepayment meter in a boarding house or hotel, which are among the few important places this could happen, although it might happen when in a residence. The fact of a person having a prepayment meter in the house, and moving about it, is an additional safeguard to the company against leaks and asphyxiation, as it makes the consumer a great deal more careful. As to having meters robbed. In four years' experience in Maquoketa, one meter was robbed, and the party in whose name the meter was set had to reimburse us for the money taken, and cost of repairs. In Clinton, in five years, I doubt if we have had over 12 robberies, and in most cases we have been able to collect the full amount taken, and repairs on the meter. We are not a bit backward in insisting that the consumer must protect our property and reimburse us for damage to the meter and money stolen from it. On our application card, which has been passed on by our attorney, we have the following clause: "I hereby make application for gas supply at No. * * *, and agree to pay cash in a prepayment meter for the gas consumed upon the premises, according to the meter registration, until I give you written notice to discontinue the supply. You shall have access to your meter and pipes at all times as provided by law. In case of a leak, or smell of gas on the premises, I agree to notify you at your office immediately. I also agree to consume a minimum of 50 cents' worth of gas each month, and to commence to use gas from the time connection is made. In case my meter is tampered with by anyone not an employee of the Gas Company, I agree to reimburse the Company in full, without question, for all gas consumed."

Regarding complaints on quarters stuck. We are gradually educating our consumers to take care of this complaint themselves, by always having some gas paid for ahead, so that the complaint can be taken care of during working hours. If other coins, chips, slugs, etc., are in the meter, the consumer must pay our collector for the slug, or the meter will be removed at once. This proposition has been entirely eliminated with us, as we have adopted a very positive policy.

A good feature of the prepayment meter is that it can often be used to convince a large consumer that he is using the gas we are charging him for on the ordinary meter. After trying the prepayment meter for a while, he will go back to the ordinary meter, thoroughly satisfied with his bill. Perhaps one reason for our success in the prepayment meter field is our method of handling it. Our discount day is the 15th of the month, our ordinary meters being read the last 4 days of the preceding month. The prepayment meters are read the 4 days before the 15th. In this way we separate both office and meter reading work, which gives our office force and fitters a chance to to keep their other work up in good shape. The meters are arranged in routes, each reader being given a satchel, prepayment meter key and 180 envelopes. On these envelopes are printed the number of the ledger account, the consumer's name and house number, a place for number of meter, reading of meter, and amount collected. These are run off on our addressogragh, the same as the ordinary gas bill. The reader goes to the meter, takes out the money, puts it in the envelope and seals it; then reads the meter, puts down number of meter, and places the envelope in his satchel. In the evening the envelopes are turned in at the office and the money counted. The next day these readings, and amounts from the envelopes, are entered in the consumers' ledger, and the consumption and money must agree. In case they do not, the meter is immediately changed. In this way we keep our prepayment meters accurate, and have a check on the reader all the time. The routes are changed among the different men occasionally. To my knowledge the Company has never lost one cent by a dishonest employee. I think if this method is followed a lot of the objections to the prepayment meter will be overcome.

In the American Gas Light Journal for 3d of last March I noticed a statement from the South Metropolitan Gas Company, of London, that, beginning the year 1913, they had 263,913 prepayment meters and 95,898 ordinary meters; which goes to show that in the old country, where they are possibly more advanced than we in the manufacture and distribution of gas, they indorse the prepayment meter.

We have recently obtained a new 25-year franchise, carrying it before the people with a majority of about 3½ to 1. Any of you know, who have gone before the people, asking them to vote you a new franchise, that it is a mighty hard proposition to get away with; but I feel that the vote given us was largely an endorsement of our fair dealing with them, and I feel we would have lots more trouble in getting people lined up on our franchise proposition if it had not been for the prepayment meter.

Discussion.

Mr. A. L. English—This will be a pretty hard subject for me to discuss, provided I gave full vent to my feelings, and if there were any ladies present I could do better justice to it on the outside. I can't say I agree with Mr. Crawford, for after using them for several years I have about come to the conclusion that they are the biggest nuisance around the gas plant. Some 4 years ago we had close to 500 of them in use, and we have had robberies galore. In one instance the meter was broken open, its contents taken and the measurer was then thrown into the creek. In one week we had seven robbed, and we found it a very difficult matter to collect the money stolen from them, or for the damage to the meter. Our attorneys seemed very dubious about being able to collect, because they said, after the money was placed in the meter it was out of the consumer's hands, and was our property. That it was the consumer's duty, of course, to protect that property as far as he could; but if burglars got in, the attorneys couldn't see that the consumer could be held responsible for it. I think one of the greatest objections to it is the matter of safety, and have had several cases in the Bluffs where people were nearly asphyxiated, through having gone to bed, leaving the gas burning. The supply becoming exhausted, late in the evening some one would come in, and, finding no light, would quietly slip a quarter in and turn on the light, not knowing about the conditions elsewhere, and the man above would come very near waking up in another sphere. As I understand it, the prepayment meter was originally gotten out to use on deadbeats, but the deadbeats have gotten wise to it. When they conclude it is cheaper to move than to pay rent, they move out the furniture, taking the box (sometimes the meter) with them. It is a week or 10 days before we discover they have gone. If anyone can prove who knocked off the box from the meter and took the money, he is wiser than we are. Of course, if the quarters put in were marked, we might be able to do something. I am down to about 225 prepayment meters, and as fast as we get them out, with a hammer we knock off the box, selling the remainder for junk.

Mr. Miller—In Dallas, Tex., we were trying to take on a lot of small chili-con-carne establishments. We got one and put in an ordinary meter, and at the end of the month the bill was $14. The proprietor said he couldn't stand that, and had the meter removed. I told him to try a prepayment meter, then he wouldn't spend any

(*Continued on page* 422.)

THE AMERICAN GAS LIGHT JOURNAL

Entered at the Post Office, New York City, as Second-Class Matter.

Published weekly at 42 Pine Street, New York City.

Telephone Call, John, 2996. Cable, Am-Gas.

A. M. CALLENDER & CO., - - Proprietors.

THOMAS J. CUNNINGHAM, ELBERT P. CALLENDER, } Editors.
SANFORD K. CAMPBELL, Associate.

CHARLES H. WADELTON, Manager.

Agents—American News Co., 11 Park Place, New York City.
Lemcke & Buechner, Berlin, Germany.
Aug. Siegle, 30 Lime Street, London, England.

TERMS OF SUBSCRIPTION.

United States, Cuba and Mexico, $3 per year. Canada, $4 per year. All other countries, $5 per year.
Single Copies, 10 Cents.

NOTICE TO ADVERTISERS.

New Advertisements and changes of copy therefor should be in hand Wednesday noon of week prior to date of issue.

NEW YORK, MONDAY, JUNE 30, 1913.

[Special Correspondence, London, England.]

JUBILEE MEETING, INSTITUTION OF GAS ENGINEERS.

[Communicated by ARTHUR H. ELLIOTT, Ph.D., Consulting Engineer-Chemist, New York Consolidated Gas Company.]

LONDON, ENGLAND, June 17, 1913.

At present writing everything points to a large and successful meeting of this Institution. The weather is fine and cool—an ideal English June atmosphere and bright sunshine. A number of American gas engineers are here, among others Messrs. M.W. Stroud, of the American Gas Company, Robert M. Searle, of the Rochester (N. Y.) Railway and Light Company; C. J. R. Humphreys, Lawrence, Mass., and several others are expected. On the eve of the meeting, it is not without interest to look back over 50 years of progress in English practice. About 1850 there were some 13 companies, operating works within a radius of 4 miles from Charing Cross, having a total capital of about $25,000,000. These works contained retorts, with about 10,000 mouthpieces, and used about 800,000 tons of coal to produce 8 thousand millions cubic feet of gas per year. The price of gas was 6 to 7 shillings ($1.50 to $1.75) per 1,000 cubic feet. All the companies were competing for business, and were not very happy in the matter of paying dividends. It was estimated that at least one-ninth of the gas made did not reach the consumers, the leakage from the mains being so high. Ths residuals (principally coke and some tar) brought a return of about $3,000,000 per annum. About 13 gallons of ammoniacal liquor of 4° Twaddle (8 ounces) was the average yield per ton of coal carbonized. This liquor was sold for about 2 shillings 7 pence (40 cents per butt: = about 130 gallons). (The average yield of tar was about 11 gallons per ton of coal carbonized. Comparing these figures with the results of recent times, the value of the tar has become much more important, because, at that time, there was no aniline color industry; the first color (mauve) being discovered in 1856. The principal uses of tar were as a wood preservative, for covering iron, and for some sorts of wooden work, especially fence posts and rails. Some naphthas were obtained by distillation, for making varnishes, and for burning in lamps, and the green oil, which distilled off last, was used for axle grease. This material was afterward (1870) found to yield anthracene that gave the beautiful turkey red dye, and revolutionized the Dutch madder industry.

The various London Companies were in keen competition for business when another competitor entered the field with a challenge of four shilling gas, and a promise of further reduction. This new Company was the Great Central Gas Consumers' Company, engineered by Alexander Angus Croll of meter fame, and the President of the Company was Mr. Dakin, the famous tea merchant. It appears that Mr. Croll was what we call a politician, and held the office of Sheriff in London. On July 9th, 1853, they held a grand reception at the gas works. The Mayor and the Sheriffs and a number of Members of Parliament visited Bow Common, and Mr. Croll explained the methods of gas manufacture that the Company had in use. The works were calculated to produce 800 million cubic feet per annum, and cost £210,000 ($1,050,000), with 4 gasholders of a capacity of 1,000,000 cubic feet. The Company laid 70 miles of mains and the output was about 100,000 cubic feet per day, produced from 10 or 11 tons of coal. Mr. Croll was interested in an alum works, in which he, no doubt, used the ammoniacal liquor of the gas works. He was also the inventor of improvements in gas meters, and had a meter manufactured in London. Like all enterprises of this character, the Great Central Gas Consumers' Company was ultimately absorbed (1870) into the Gas Light and Coke Company. By way of contrast, compare the English gas industry of to-day, with its output of over 200,000,000,000 cubic feet per annum. Of this the great Beckton works can produce 60,000,000 cubic feet per day, and uses 1,000,000 tons of coal per annum. The South Metropolitan works and the Commercial Company's plant will probably produce as much more. The consumption of gas per capita of population per annum is now over 8,000 cubic feet, and it is calculated that only 10 per cent. of this is used for illumination in flat flame burners. Contrast also the value of the residuals with that of 50 years ago. The yield of tar per ton of English coal is about 13 gallons; and of ammoniacal liquor about 40 gallons of 8 ounces strength. In addition to this, some works now recover cyanogen, which was formerly lost in the iron mass used for purification.

To-day the Jubilee meeting of the Institution opened with over 500 in attendance. Sir Corbet Woodall gave his masterly Presidential address, of choice thoughts and most valuable suggestions. It certainly is the work of a broad and master mind, and was received with round after round of applause. It should prove instructive and suggestive reading for the younger members of the profession, and a stimulus to high and noble work.

The Institution was born in the City of Manchester, in 1863, and of the 24 men who started it, only Dr. Thos. Newbigging is alive to-day, and the members of the Institution presented him this morning with a handsome oil painting of himself. The veteran author and engineer received it with expressions of kindly feeling and goodwill, and with a grace of language not usually at the command of engineers. After the meeting, Sir Corbet Woodall entertained the officers, and visiting members of Gas Engineering Societies, at the Royal Automobile Club, on Pall Mall. Among those present were Dr. Bunte, of Karlsruhe, Dr. Körting, of vertical retort fame; Dr. Walter Bogert, President of the Society of Chemical Industry; Dr. Bueb, of Dessau; and other prominent men from America, Australia, Canada, Denmark and France. It was a notable gathering of the brains of the gas engineering profession. The programme as now laid out is as follows:

"Coke Oven Carbonization," by Mr. W. Chaney, Birmingham.
"Liquid Purification," by Dr. W. B. Davidson, Birmingham.
"Creating an Outdoor Staff," by Mr. F. W. Goodenough, London.
"Depreciation—Estimated and Actual," by Dr. A. C. Humphreys, New York, U. S. A.
"Notes on Suburban Gas Supply," by Mr. A. A. Johnston, Brentford.
"Ventilation and Gas," by Mr. S. B. Langlands, Glasgow.
"Gaseous Heating," by Messrs. E. W. Smith and C. M. Walter, Birmingham.

Other papers are promised, but titles are not yet announced. One very notable feature of to-days meeting was the starting of the preliminaries for the foundation, in the city of London, of the Gas Institute, a home for all English gas organizations.

BRIEFLY TOLD.

JUNE MEETING, ILLUMINATING ENGINEERING SOCIETY, CHICAGO SECTION.—The last regular interim meeting of the Chicago Section, Illuminating Engineering Society, was held last Friday, in the Monadnock Block, Auditorium, in the rooms of the Western Society of Engineers. The paper of the evening (and a highly interesting one it was) which was prepared by Mr. A. J. Sweet (Milwaukee, Wis.), had for its title, "Notes on Postal Car Illumination." The paper, clearly and perspicaciously, set forth the results secured through a series of tests obtained in connection with the illuminating of the postal cars

of the United States mail service. The regular monthly meeting of the Board of Managers was held in the Grand Pacific Hotel, at 6:15. It was well attended, and the sessions will be resumed in October.

JUNE MEETING, PHILADELPHIA SECTION, ILLUMINATING ENGINEERING SOCIETY.—The June meeting of the named Society was held in the Engineers' Club, Philadelphia, the evening of the 20th inst., and the session was in reality a dinner function, in place of the regular meeting. Prof. James Barnes delivered a short address on "Recent Ideas in Regard to the Spectrum;" and Dr. Wendell Reber spoke entertainingly on "The Relation of the Human Eye to Illumination, Natural and Artificial." The presentations were provocative of useful discussions. The election for officers resulted in the naming of these gentlemen:

Chirman.—Prof. C. A. Hoadley.
Secretary.—L. B. Eichengren.
Managers.—F. C. Dickey, H. H. Ganser, S. Snyder, N. Calvert and H. Horner.

Prof. Hoadley acknowledged his promotion in pretty phrase. The gathering (the last of the season) was a very enjoyable one—E.

CURRENT MENTION.—

MR. PETER YOUNG has resigned from the engineering staff of the Astoria (Long Island, N. Y.) Light, Heat and Power Company, in order to accept the dual position of Vice-President and General Manager of the Washington (D. C.) Gas Light Company. We are all positively sorry to know that Mr. Young leaves the New York division of gas engineers, for he surely is a man of men—capable engineer, and even-tempered, cultured gentleman. However, the sharp sting is lessened in the knowledge that his going from us means positive promotion for himself. Further, the great gas corporation that gains him is also to be congratulated on having been able to secure him, especially at a time when the services of such a man will be thoroughly advantageous to its still more marked advancement.

ON page 405, last issue of JOURNAL, it is said that The Gas Machinery Company, of Cleveland, O., had been awarded a contract for the placing of a water gas set in the plant of the Jacksonville (Fla.) Gas Company. The Gas Machinery folks did get a contract for Jacksonville, on the named account, but the apparatus is to be set up in Jacksonville, Ills., not Jacksonville, Fla.

"G. S.," writing from St. Paul, Minn., under date of the 23d inst., says: "Mr. V. L. Elbert, recently appointed General Manager of the St. Joseph (Mo.) Gas Company, was tendered material evidences of the high regard in which he is held by both the office and works' employees of the St. Paul Gas Light Company, prior to leaving for his new field of duty. His former associates here assuredly wish for him the very best possible success in his direction of the artificial lighting service of St. Joseph."

ARTICLES of incorporation have been filed noticing the formation of the White River Gas Company, of Muncie, Ind., by Messrs. John W. Smith, B. F. Torey and R. G. Haylor. Messrs. Haylor and Torey are connected with the Central Indiana Gas Company, and Mr. Smith is Treasurer of the Muncie Oil Engine Company. It is capitalized in $50,000.

PAPERS announcing the incorporation of the Alta District Gas Company, of Dinuba, Cal., have been filed. The Company is capitalized in $45,000, of which two-thirds has been subscribed in cash by Messrs. A. A. Weber, G. W. Wylie, R. W. Wilson and W. L. Muncy. The Company is an offshoot of the Dinuba Company, and it proposes to furnish gas to the residents of the outlying districts of Reesley, on the north, to Orosi, on the south. The prospect is a decidedly good one, and the people in charge are like unto the prospect.

"B. T. G.," writing from Newark, N. J., under date of the 21st inst., remarks: "Like unto his prototype of many years ago (Absalom the 'Original'), one Absalom P. Bachman, of Orange, N. J., recently emitted a wail before Vice-Chancellor Emery, in opposition to the merging of the Standard Gas Company, of Monmouth county, N. J., with the Atlantic Highlands Gas Company, also of New Jersey. The later Absalom owns 180 shares of the Equitable Light, Heat and Power Company, another New Jersey corporation. The latter owns 1,750 shares of the 1,000 shares of the Standard corporation and virtually all of the capital of the Atlantic Highlands concern. Complainant before the Vice-Chancellor pleaded that, as an 'independent minority stockholder, he should have been given notice of the merger,' which latter he insisted was prejudicial to his interests. Wherefore, he further prayed for a Receiver. The Vice-Chancellor denied the application, maintaining preliminarily that the corporation act did not entitle complainant to a separate or individual notice. He, however, 'relieved' Absalom to the extent of stipulating that the Companies be kept separate, pending a final adjudication. During the presentings, Mr. Bachman waxed eloquent, in fact wrothy, over the matter, remarking that 'The Public Utilities Commission had the audacity to approve the merger;' but his flow along these lines was cut short by the Vice-Chancellor, who sharply said, 'You must not speak that way of a public body acting officially.' Whereupon Absalom 'waxed humble' and begged the Vice Chancellor's pardon. The Bachman contention was that his valuable interest in the Standard concern had become so diluted by the merger that it was now 'hardly recognizable.' Mr. Foster, appearing for the combined interests, said that Mr. Bachman's elevation from a minority stockholder in the Equitable had greatly benefited his interests. Prior to the merger, the Standard Company had been giving poor service, from an antiquated plant 50 years old, to residents of Keyport and Matawan, at a rate of $2 per 1,000. And, finally, that the merger had been originally suggested by the Public Utilities Board because of complaints from consumers. Concluding, he said: 'These same consumers are now getting better service at $1.50 per 1,000, while the merging of the two companies had been accomplished without the injection of a drop of water in the capital stock. The last 5 months of independent operation resulted in a loss of $1,500, whereas, the first 5 months following the merger showed a surplus of close to $2,000.'"

AT a meeting of the Directors in the Derby Gas Company and the Birmingham Water Company, of Derby, Conn., Mr. C. F. Brooker was chosen Vice-President, and Mr. F. M. Clark, a Director in the Derby Gas Company. Mr. Chas. H. Nettleton was elected President of the Birmingham Water Company, and Mr. F. M. Clark was chosen a Director in the same corporation.

THE new proprietors of the Louisville (Ky.) Gas and Electric Company have announced that, in the readjustment of the managing forces of the Company, Mr. J. J. Humphreys, who has been Managing Engineer to the Louisville Gas Company since 1909, will retire from the service. Also, that Mr. A. T. McDonald, who has acted for quite a while as Manager of the Sales Division of the Louisville Lighting Company, will also retire. The resignations are to date from the 1st prox., but undoubtedly some arrangement has also been made whereunder both gentlemen will remain on its payrolls for some weeks.

THE Glassboro (N. J.) Gas Company has laid out two tennis courts on which the public are invited to play the game during their evenings without charge. The courts are lighted by means of arc gas lamps.

THE Providence (R. I.) Gas Company has informed the North Providence Improvement Association that it will this summer extend its main system to and through the outlying section known as Fruit Hill.

THE Doherty Syndicate has acquired the properties of the Niagara (N. Y.) Light, Heat and Power Company, of Tonawanda, N. Y., which corporation supplies artificial and natural gas to the settlements of Tonawanda and Kenmore. The new executive management is thus composed: Directors, F. M. Lowery and A. J. Devlin, of Buffalo: Chas. E. Hill, of Batavia, and Messrs. H. Wende and L. T. Palmer, of Tonawanda,; President and General Manager, L. T. Palmer; Vice President, F. M. Lowery; Secretary and Treasurer, Arthur J. Devlin. The plant will be completely rehabilitated.

MR. J. B. INGLE, of Atlanta, Ga., has been appointed Manager of the Perry (Ia.) Gas Company, succeeding Mr. John Carmody, who has conducted the plant since its sale to Mr. John A. Read, of Cedar Rapids, Ia.

THE Carolina Traction Company, the successor to Kuemmerle & Co., as the proprietor of the right to construct and operate a gas plant in Rock Hill, S. C., will proceed forthwith in the construction of the works.

THE San Antonio (Tex.) Gas and Electric Company has increased its capital stock to $1,500,000. It was capitalized in $1,160,000. Mr. W. B. Tuttle, the Manager of the Company, was recently in the East on a short visit. His legion of friends in this section will be glad to know that he is meeting with all possible best success in the Lone Star State.

THE proprietors of the New London (Conn.) Gas and Electric Company have filed a new schedule of selling rates. Under the showing the gas rate is 10 cents below the former charge; the rate for electric current is cut exactly one-third.

MR. JAMES HAGGERTY, at one time cashier and accountant for the Corning (N. Y.) Gas and Electric Company, died at his home, 160 Seventh avenue, the morning of the 18th inst. He was in his 30th year.

(*Continued from page* 419.)

money for gas except when he was doing business. Ten days after he had the box full, and about 10 days later we emptied it again; so we put the meter on our route list to be emptied every week. He was spending from $30 to $40 every month, whereas a $14 bill for 1 month almost paralyzed him before. The question of robberies, of course, came up, and it took us some little time to work that out. It can be made a matter of contract, and the responsibility of the consumer made entirely clear. We finally got it to a point where the consumer, who made an application for a prepayment meter, put up a deposit of $2.50, to guarantee that the money deposited in that meter would be delivered to the Company when the collector called for it. Even that didn't stop the increase in prepayment meters in the city. When I left Dallas there were 25,000 meters in use, of which 5,000 to 6,000 were of the prepayment type. All prepayment meter users taken on in the last 2 years had put up a deposit of $2.50. This robbing of meters is common in all large cities. In Dayton, O., $100 reward was offered for the apprehension of a meter despoiler, and in the course of about a month they had 25 convictions, and a drawer full of keys. That stopped the business. The question as to whether it pays to use prepayment meters came up at Dallas, and I went over it to ascertain exactly the condition of the business. Our income from prepayment meters was about $10,000 a month. I took the average cost of repairs to ordinary meters, as shown by actual returns from our shop, and added 50 per cent. to that to cover the repairs to the prepayment devices, which the foreman thought more than ample. I charged up 5 per cent. interest on the additional investment in the prepayment meters, and 10 per cent. for depreciation. Then I took the revenue from the prepayment meters in excess of the net revenue from ordinary meters, and had between $2,000 and $3,000 profit from our prepayment meters, over and above what we would have had if we had sold the gas in the ordinary meter. In addition, we had customers using gas that we wouldn't have had with ordinary meters, simply because they couldn't or wouldn't put up a deposit sufficient to cover 6 weeks' consumption of gas. I think objections to prepayment meters are often possibly due to the troubles that they may cause than to the meters themselves.

Mr. Davis—The prepayment meter for high class localities use never appealed to me. Mr. Crawford is an emphatic advocate of its general utility, and proposes to give the prepayment meter more prominence than the ordinary one. It seems to me on the face of his proposition it is very uncomplimentary to the people he serves; demanding pay for the goods before they get them. The very suggestion of the prepayment meter carries the idea of distrust. Mr. Crawford's argument seems out of harmony with high plane conditions of to-day. He says the prepayment meter will on discount days drive from your office the chronic faultfinder with his bill, and one person in line finding fault naturally makes other people feel the same way. Do we want to drive these people from our offices? We know our meters are as nearly correct as possible for a measuring device to be; and we know that our business is absolutely legitimate in every way. Are we not showing weakness by not trying to convince "Mr. Chronic Fault-finder" that he is wrong, and helping him see things as they really exist? If he is too biased to be convinced your argument will show him up to those in the line who were induced to feel that way by his kicking, as the fault-finder who is impervious to argument is in the minority. It seems to me the kicker is an excellent medium through which we can do not a little free advertising, and we should court the opportunity when he kicks on discount days before a long line of customers. We wish to make our customers feel that our interests are mutual, and the Company is sure to have the faith of the public when it takes that public into its confidence, and treats it trustfully. When we follow this plan carefully and honestly, no matter which type of meter we favor, we will have no trouble in getting a renewal of our franchise from the hands of the voters.

Mr. Smith—As Mr. Crawford and his paper so far seem hopelessly in the minority, I feel it necessary to back him up. A year ago Mr. Weisgerber talked very strongly on the dangers of the prepayment meter, and even had data as to the number of deaths per thousand that had occurred from it. He had me going some; believe me! I was thinking about the old town up in Dakota, at the tender mercies of this terrible weapon, and was almost sweating blood, and wishing I was back there to warn the people. As soon as I got home ,I got out a card with these words printed on it:

"PREPAYMENT METER—CAUTION!

If gas has been allowed to go out, DON'T put money in the meter until you are sure that all fixtures in building are closed. Please observe this notice."

I went out with a man to show him just where to put it—which was right over the prepayment attachment—so they would be sure to see it. I put that card on every prepayment meter. I think Mr. Weisgerber stated that 8 deaths out of every 1,000 were caused by prepayment meters, and if that is the truth, there should be a law passed putting such a thing out of existence. Kicks we have, the same as in any other town, only where everybody knows everybody else they are a little bit more emphatic than with you fellows, who talk to them from behind a $25,000 set of office fixtures. When a consumer is very sure that something is wrong with his meter, we take it out and test it; but in our small town we never test a meter unless we can get the fellow to be right there; otherwise we call his bluff. Going to his house we get the meter, and then to his place of business, bring him to the office and test it right before him. Then he will tell his neighbors that they can have their meters tested and get a square deal, because Smith shows you how he tests it. We never have to do that with the prepayment meter. We have had cases of restaurant owners kicking on bills of $5 or $6 a month with the standard meter, but they are now using $15 or $16 worth, and never say a word about it. If you were to ask them anything about the matter they will say they are doing more business than when they had the other meter. As to the adaptability of the prepayment meter to almost any conditions. I find it very well adapted to lodge halls. Not every lodge can have its own hall, and sometimes 5 or 6 lodges meet in the same hall. By dropping in a quarter, a society will get sufficient gas for light and what little cooking they want to do for the evening, and the owner of the hall is entirely relieved from responsibility or expense.

Mr. H. B. Maynard—This is to be a real gas meeting. There are always a few old friends for whom I look, amongst these being Mr. "P. P. Meter" and Mr. "Naphthaline." The other gentleman may make his appearance later. Having heard this thing talked so long I congratulate this meeting on finally settling it, for I think it has been thoroughly determined this morning how the matter stands. All those who favor the prepayment meter are for it; all those opposed to it are against it. Like a good many other questions this will resolve itself according to our individual experiences. In Waterloo, with 8,300 meters, 4,500 (I pretty nearly said "straight," but I don't like that term) being what we call black meters, and we know that our losses on prepayments are considerably less (in proportion) than through the black meters. We put in a prepayment for a customer on two accounts. First, because he wants it himself and gets it; second, because we want him to have it and he gets it. Experiences vary, and others will get very different results; but we are well satisfied.

Mr. Hoskins—It has been said that the use of the prepayment meter must be determined by the size of the situation. Mr. Crawford, in Clinton, has a different class of people from ours in Sioux City. He has had 12 losses in the last 5 years. In Sioux City we have a good many people who move in-and-out, working in the packing houses; and while our losses are very small, and very much smaller on the prepayment meters than on the regular, we have not kept it as low as Mr. Crawford has. I do not think that, in the ideal American home, gas is going to go out so quickly that there will be confusion because of quarter meters. I understand the gas goes out slowly, giving warning in plenty of time. Mr. English mentioned the people who move on the spur of the moment and take the money box with them. Those are just the people who would move out and not leave their address if they had a regular meter, and your chances are a great deal better with the prepayment, for a great many people think if they can beat the gas company by not paying a bill, it is no offense at all. In Sioux City, out of 11,000 meters we have about 2,700 prepayments, and although we don't push them we give them to those who want them.

Mr. Haines—I have been very much interested in this discussion because a very large proportion of our meters are prepayments. In fact, we have some 12,500 out of 21,000; or more than half. In the 10 years I have been in Des Moines, I fail to know a case of any serious accident as the result of a meter shutting off from a lack of money. We are careful not to set a prepayment meter in an exposed position, such as over a doorway in a tenement house, where anybody can get to it and at it. Our contracts provide that the consumer

shall be responsible for the care of the meter and the money in it, and have had little difficulty in collecting when a meter had been tampered with from outside. It surely is injudicious to set a meter where anybody can put a screwdriver in the lock, twist it off and take the money. We have had quite a number of robberies, as we naturally would with that many meters, and those robberies can be divided generally into three classes. The first are traceable to systematic robberies by organized gangs of thieves. They can generally be caught easily, because they will sooner or later become so bold that you can get a pretty accurate description of them, and, by a little care and vigilance, locate them. We don't prosecute those men in our own name. They are prosecuted by the owner or tenant of the house in which the meter was robbed. Our first case was of a man caught robbing a meter after 6 o'clock P.M., which put him under the penalty of breaking and entering during the night. He got 5 years in the penitentiary, and his conviction stopped the robberies absolutely for a year or so. Subsequently two other men were sent up for a like offense for 3 years. It is a very serious offense, and the judges are drastic in their penalties. The second class might be called itinerant robbers, such as hangers on in saloons, who, in a half-drunken condition, rob a meter to get money to buy more drink. Those are very hard to catch, for, as a rule, they have friends. The only way you can get them is through somebody informing, then going after him and probably having him locked up for petty larceny. However, such cases are rather few, and don't amount to very much in money. The third class is comprised of householders who deliberately rob the meters themselves. Looking up a man's record to find out something about him, generally results in putting him under suspicion, and if you can't actually convict him or get him to confess, you can substitute a standard meter for the prepay. Such cases are not very numerous, so the loss doesn't amount to a great deal on that account. I do not believe the average consumption on a 5-light prepayment meter is as great as that on a 5-light standard meter; but I think you can get a larger number of consumers on prepays than on standards, particularly among foreigners and the laboring element; and they are desirable on that account. I think there is a great deal of difference in feeling in different communities, toward the use of prepayment or standard meters. We make no distinction at all. If a customer wants the former we put it in, if a standard meter, he gets that, or if he desires to change from one to the other we make the change without cost to him. I think it is better so, because if you try to put any bars between the two you are very apt to create suspicion in the mind of the consumer that some ulterior motive is behind it. We have a standing offer of $25 reward, which is generally understood to apply particularly to the police department, for the arrest and conviction of anyone robbing a prepayment meter. That helps to keep the police vigilant, and most of the knowledge with regard to robberies comes through that department.

Mr. Lucena—From my present work, I haven't very much to say about prepayment meters, but I have had experience along this line in a very large plant, where the number of meters ran something like 350,000, of which number 55 per cent. were of the prepayment type. Robberies were numerous, but the cases of accident due to asphyxiation numbered one in the whole time the prepayment meters were used; that is, one due to the gas being turned on after it had gone out. Another case was of a young man who, going home intoxicated during the small hours of the morning, with his family asleep, in order to get money to buy more liquor, used a hatchet to get the contents of the cash box, and nearly asphyxiated the family. I remember a very small plant in the South where the superintendent thought to expand his business by the use of ten-cent prepayment meters, with the idea of reaching the very poor colored people. I don't know whether he ever put it into effect or not.

Mr. Asendorf—It is matter of record that, when the prepayment meter was first introduced, the sales of straight meters as compared with prepayment meters were about 50 to 1, now it is about 5 to 1; so you can see that prepayment meters are being sold in much larger numbers than at the start.

Mr. Maynard—I want to know if I misunderstood, when I thought one of the members said that, under legal advice given him, a contract guaranteeing against losses through the robbery of a prepayment meter could not be upheld.

Mr. English—I took the matter up with our attorneys, (we never got a full or final opinion on it) who said they thought it would be very hard to draw up a contract of that kind which would stick clear through if anybody wanted to fight it.

Mr. Maynard—We insist on the signature of the applicant to a contract of that kind, and while we have not had to go to court with them, we have made good with it up to date. We offer a reward of $50 for information leading to the conviction of anyone robbing a meter, and two parties that were arrested each served a year in jail. This happened in Cedar Falls, and it is very unpopular to rob meters. In the six years since then there has not been another robbery.

Mr. Miller—The courts of several States have decided that, when a man makes application for a gas meter in his house, the meter becomes his agent, as well as the gas company's, to measure that gas; and that the money deposited in it, is in the joint agent's hands, in charge of the consumer, and for which he is responsible, until the company comes and gets the money.

Mr. Haines—That is the correct interpretation. If under an arbitrary contract you only supplied prepayment meters, you might find difficulty in enforcing it; but where it is optional with the consumer to take either form of meter, I think your contract would be binding to protect that meter. A rather facetious side to this prepayment business might suggest a method of handling certain cases. A consumer complained that his bills were too high—that is, that he had been giving his wife too many quarters to put into the meter. On going to the house to ask his wife about it, she begged us to hush it up, as it was the only way she could get money to assist at the matinee. But it also occurs the other way, where the wife, having given the quarters to her husband, said quarters don't all show up in the meter.

Mr. Weisgerber—Looking over Mr. Crawford's paper, which is a pretty good defense for the prepayment meter, I notice that no deposit is required by his Company as a guarantee. There is hardly a plant in the United States which had the feeling against it that there was against the Company that we took over 2½ years ago; and there is hardly a plant in the United States toward which there is now a better feeling. I say this without egotism; but I want to follow up my line of thought. We require a deposit for the prepayment as well as for the regular meter. We tried hard to reduce our prepayment meters, and have succeeded in doing so; in fact, we have at the present writing only 237 prepayments in Cedar Rapids, Marion and Kenwood Park, and feel that the men you cannot rely upon cannot be trusted with a prepayment meter, therefore you should insist upon a deposit or a guarantee from some person of credit. Mr. Crawford says that the prepayment meter reduces the work of the office and the cost of collections, but that has not been my experience. We need more blanks in the use of prepayments than for regular meters, and if we find a prepayment robbed it is a very hard thing to collect for it. We know these automatic devices will work a great deal of the time; but there are times when they won't work. It is said that meters are good for lodge halls. They are, in some cases. We know that in every business a large amount of common sense is used, and no man can say that the prepayment meter is no good, or that it is the only thing on earth. We set prepayment meters under certain conditions, but have had several robberies, most of them happening in lodge rooms and dance halls. When we made the proprietor of a hall pay us the money that was missing and for the damage to the meter, he said he didn't want that kind of a meter. We had trouble with prepayment meters when we changed the price of gas. We had every known make, and to change them required an expert. He fell down time and again. If you have any idea that this can be done easily, some day when you will change the price of gas you will find what you are up against. The statement has been made that there is practically no difference in the volume of gas sold by prepayment or standard meters. That has not been my experience. I told you a year ago how we took out the first 100 meters, and that after a year we found an increase in the consumption of these people in the same homes. Since writing that paper I have kept very close tab on the last 1,500 meters taken out, and where the people owned their own homes, domestic conditions being practically the same, we have more than doubled the gas by using regular meters. You will find that quarter meters as a rule tend to economy. If the gas goes out at 9 or 10 o'clock at night, very few people will go down in the dark to put a quarter in the meter. They wait until the next morning. In four cities which are operated under my jurisdiction, over one-third of our bad debts and uncollectible bills are due to prepayment meters.

Mr. Maynard—Would you tell us what the percentage of your losses is per 1,000?

Mr. Weisgerber—Less than 1/10 mill per 1,000 feet. The largest part of our bad debts is from consumers that were connected before we bought the Company. We try to be very careful about credits.

At the suggestion of the President, the continuation of the discussion was put over until after the recess for luncheon.

(To be Continued.)

Chamber Ovens in a Small Gas Works.

This description is abstracted from a paper on "Carbonization," read by Mr. E. A. Franks, of Ferndale, England, at the last meeting of the Wales and Monmouthshire District Institution of Gas Engineers:

In installing our plant, the primary object I had in view was to reduce skilled labor to a minimum without the use of machinery. The setting, as working at present, consists of 2 sets of 3 chambers each, set back-to-back, each set having its independent furnace; the capacity of each chamber is 2 tons 15 cwt., being 18 inches wide by 11 feet long and 8 feet high. The floor of the chamber is at an inclination of 45° with the horizontal, and the top of the chamber at about 32°, so the coal at the front of the chamber is deeper than at the back. The opening for charging is on top at the back of the chamber; the coal by gravity to fill it. The front of each chamber is sealed by a sliding door working in channel-iron guides, which also serve as entering buckstays.

The top of the chambers is 15 feet above the railway, and to raise the coal for filling the chambers the following method is adopted. A steam-winch is connected by two steel-wire ropes to shackles fastened to a hopper holding 2 tons 15 cwt. of coal. To fill the hopper, it is lowered to the side of the coal truck, and when full is raised to the roof. A truck is then run under the hopper, and one man pushes it over the charging door of the chamber. The coke from the chamber falls into a subway in front of the chamber, and is loaded by hand into the coke barrows and wheeled to a steam lift and raised to the yard level. The gas is taken from each chamber through a 9-inch diameter pipe connected with the top of the old hydraulic main; and each chamber can be shut off by lowering a valve spindle which passes through the bridge pipe.

Each furnace is 4 feet square by 13 feet deep, and is charged from the top. The bottom of the furnace is constructed similarly to all deep fires, and the outlet for the furnace gases is 4 feet 6 inches above the fire-bars at the back of the furnace. The reasons for constructing a fire of such a depth were two: (1) To secure, as far as possible, a constant depth of fuel, between the furnace bars and the take-off for the furnace gases; (2) to do away with the necessity of looking after the fires should a stoker fail to turn in on any shift. The rule is that the furnace be kept filled and left full at the end of each shift; but it will run without attention, except, of course, occasional pricking, for a period of 16 hours. The furnace gases pass from the generators along flues to the chambers, which they heat somewhat after the manner of coke ovens—the heating commencing at the bottom.

The working of the chambers is as follows: Each stoker does all the work in connection with charging, drawing and handling of the coke of two chambers per shift, and is paid for this work $1.20 per shift. From the table it will be seen that the cost per ton of coal carbonized for stoking was $.2054 per 1,000 cubic feet of gas made. The boilerman works the winch for raising the coal and the winch for loading the coke into the railway truck. He also sees to the lowering of the valve on each chamber at the end of each period of carbonization.

One great advantage of chamber settings over horizontal settings is their mobility of production. Nominally the coal is carbonized in each chamber in from 18 to 24 hours, and the number of charges are spread evenly over the 24 hours, so as to maintain a uniform quality of gas. As, however, I have storage for only 90,000 cubic feet of gas in the gasholder and 40,000 in compressed storage with a maximum daily output of 200,000, arrangements have to made in the winter time to have all the stock possible on Saturday evening, and to have the maximum make during the heavy lighting hours. To do this it is necessary to get the stock by 6 A.M. on Saturday morning by ordinary working, and then stand off until noon. It can be arranged to have all the chambers "off" by that time, and it is then simply a question of charging all the chambers as soon as possible, to have a production during the lighting hours of at least 50 per cent. above the normal. I may say that the winter of 1912–13 was almost my first winter free from the fear of shortage of gas.

As wages are the important factor, and as my plant is worked under somewhat abnormal conditions, it is only fair that a slight description of certain wage-governing factors should be given. In the first place, the whole yard—ash-tip, coke yard, etc.—measures only 40 feet by 40 feet; so that when a pathway is left across the yard, there is little room for coke storage. For this reason the bulk of the coke made has to be put in railway trucks as produced. The railway is 10 feet above the yard level, and a hopper holding 12 cwt. of coke, guided by channel-iron framing, and raised by a steam-winch erected on a platform 15 feet above the retort house floor, raises the coke to the required height, where it is tipped over a screen: the breeze coming back again through a shoot for boiler fuel. This handling of the coke is an item which would not arise were the yard larger.

The boilerman's wage is $1.75 per shift of 7 days per week and 12 hours per shift. For this wage, in addition to the work already mentioned, he does the shunting, looks after the pump, putting-on and taking off pressure, and running the engines. The wages paid to the boilerman are the same as were paid under the old conditions, and, since there are only 2 men for the 24 hours, no saving could be expected under this head.

The advantages that have accrued from the adoption of the chamber as compared with the horizontal settings, may be summarized as follows:

1. Reduction in number of stokers employed, with consequent saving in labor charges.
2. Greater mobility in the production of gas, rendering the punctual attendance of the stoker less a matter of importance.
3. Being able, at almost any time, to largely increase the producing power of the chambers.
4. The production of a coke of greater value than the ordinary gas coke.
5. Considerably less room required for the chambers than for the horizontal retorts. The 6 chambers and two furnaces, over all, measure 20 feet by 22 feet, and have produced 220,000 cubic feet of gas in 24 hours, and no alteration has been made in the structural building.
6. Considerable saving in fuel in the furnaces and more uniformity in working them; and, as there are only two furnaces used in the winter, there is great saving in wear and tear.
7. The repairs to the chambers are considerably less than the repairs to ordinary retorts, and, what is more, such repairs can be done each year, and the chambers are cooled without interfering with any other portion of the setting. Minor savings are lime for luting retort lids, retort house tools, shovels, etc., clearing ascension pipes, and other savings following upon these.

In the settings I have, there is room for many improvements, and I hope that they will be carried out; but from the experience I have had with them as they are, in my opinion, chamber settings are an improvement on horizontal retorts.

In conclusion, I should like to mention a matter which, in my opinion, holds possibilities for chambers over ordinary retorts in small gas works, and that is their continuous use, full working, winter and summer. To the small manager, and to the large one as well, lighting-up beds in winter and dropping them in summer is a worry of which he would be glad to be rid. Similarly the employment of the same number of stokers in summer as in winter, and the maximum use of all the plant should prove of financial benefit.

The results of 30 weeks' working, ended April 24, 1913, are as follows:

Coal carbonized	2,637 tons 1 cwt.
Gas made, as per station meter.	28,346,800 cubic feet.
Coke made (12.5 cwt. per ton of coal)	1,438 tons 5 cwt.
Coke sold	1,155 " 16 "

NOTE.—The returns for coke made and sold are for 6 months ended March 31, 1913; the returns to April 24 not being obtainable at the date of writing the paper. The coal carbonized to March 31 was 2,301 tons. All breeze used for boiler, and no account kept.

From the above results, the following figures are derived:

Gas made per ton of coal carbonized	10,760 cubic feet.
Coke sold " " "	9.3 cwt.
Coke sold per cent. of make	80.36
Labor stoking per ton carbonized	= .2054
Labor stoking per 1,000 cubic feet gas made	= .0188

The tar produced during the March quarter amounted to 11,551 gallons, or 10.153 gallons per ton of coal carbonized. An accident to the tar and liquor storage tank prevents my giving any return for the December quarter of 1912.

Test of 12 tons 19 cwt. of Coed Ely No. 3 Rhondda Coal, made May 6, 1913.

Three chambers were used for the test, and charged every 18 hours:

No. 1 chamber being charged at	10 P.M. May 5
No. 2 " " "	4 A.M. May 6
No. 3 " " "	10 A.M. May 6
No. 1 " " "	4 P.M. May 6 and so on.
Coal carbonized	12 tons 19 cwt.
Gas produced	139,700 cubic feet.
Mean illuminating power	14.1 candles.

Composition of the Gas.

	Samples taken at					
	10 A.M. Per Cent.	11 A.M. Per Cent.	12 Noon. Per Cent.	1 P.M. Per Cent.	2 P.M. Per Cent.	3 P.M. Per Cent.
Carbon dioxide	2.8	3.0	2.6	3.4	3.0	3.4
Illuminants	2 8	3.0	2.6	3.2	3.4	3.2
Oxygen	trace	trace	trace	trace	trace	nil
Carbon monoxide	7.3	6.6	6.5	6.1	6.1	6.8
Methane	25.5	25.8	26.3	26.4	26.5	26.0
Hydrogen	58.0	57.8	57.7	57.5	57.0	57.6
Nitrogen, by difference	3.4	3.6	4.0	3.3	3.8	3.0

Analysis of Sample of Coed Ely Coal.

Fixed carbon	66.71 per cent.
Volatile matter	27.80 "
Sulphur	1.14 "
Ash	3.2 "
Moisture	1.15 "

Analysis of Tar.—Specific gravity, 1.13.

	By Volume Per Cent.	By Weight.
Light oils up to 170° C	8	6.97
Middle oils up to 270° C	28	25.64
Heavy oils up to 350° C	8	7.51
Pitch		59.88

Special English Correspondence.

COMMUNICATED BY NORTON H. HUMPHRYS.

DORCHESTER, ENGLAND, June 10, 1913.

The Institution of Gas Engineers.—Progress and a Big Gasholder at Oldham.

The event of the month is the Fiftieth Annual Meeting of the Institution of Gas Engineers, which is to be held in London, on the 17th, 18th and 19th insts., under the guidance of the President, Sir Corbet Woodall, best known in gas circles as the Chairman of the Gas Light and Coke Company. The event is to be celebrated by a jubilee dinner, and by the presentation of a testimonial portrait in oil to Mr. Thomas Newbigging, and by the award of the Birmingham medal to the President. The Institution has had a somewhat varied career, and it can scarcely be said that the 862 members comprised in it are a full representation of the 2,000 or more gas undertakings in the United Kingdom, although with few exceptions the absentees are amongst the smallest class of gas works. There are many large manufacturing concerns and capitalists, who run a gas works as an incidental or auxiliary to their principal line of business, and, therefore, have no special interest in the progress of the gas industry. The present Institution was organized under the title of the British Association of Gas Managers, at Manchester, on 15th December, 1863. In 1881 there was a split in the camp, and the main bulk of the members carried on the Association under the title of the Gas Institute, while the seceders formed a society under the present title. After some 10 years the differences were made up, and to the present time the Institution has been the sole national representative. Various endeavors have been made from time to time to widen its scope by

enlisting the sympathies and support of gas undertakings, directors, secretaries and manufacturers of gas apparatus. And with regard to the latter class, it has always received not only positive sympathy but valued support and assistance. A glance through the titles of lectures, papers, and communications submitted to meetings will show that the indebtedness of the Association in this respect is greater than at first sight might be supposed. From the earliest years of its formation, there have been farseeing members who hoped that the Institution might have a home and center of its own, and might carry on the work at present being done by the Gas Companies' Protective Association, the British Commercial Association, the Society of British Gas Industries and the Sulphate of Ammonia Committee. The work already done by these various bodies, and their vigorous condition at present, show that the need was no fancied one, and there is, perhaps, a wider opinion than at any previous time in favor of an amalgamation of forces. Already it has been found practicable to affiliate the District Gas Managers' Association with the Institution, and this suggests a direction that promises a solution of the problem.

The report of the Council refers with gratification to the fact that, during the year, the President has received the honor of knighthood, and also, with Mr. Thomas Newbigging and Mr. Charles Carpenter, been made Doctor of Science of the University of Leeds, while Mr. Dugald Clerk has received a similar honor from the University of Manchester. A new feature has been introduced with regard to the reading and discussion of papers. Authors will be required to give an abstract only, instead of reading the papers *in extenso*, and a form has been issued to members requiring advance copies of papers, or intending to take part in discussions. This arrangement to some extent meets the difficulty created by limited time, or by discussing important subjects on a possibly incomplete or imperfect hearing of the paper. But it offers no advantage as compared with sending out advance copies broadcast. A member can scarcely form an opinion from the very brief titles, which on this occasion are apparently limited to four words, as to whether there is likely to be anything in the paper to which he would wish to speak. He may, after undertaking to contribute to the discussion, find his ideas completely covered in the paper. There is a more liberal response to the requests of the Council for papers, and the name of Dr. A. C. Humphreys, of New York, will be noticed with gratification in the list of authors. What is known as the commercial end appears to claim most attention, which is rather remarkable, seeing that the British Commercial Gas Association holds an annual session, and it might be suggested that a subject like "Creating an Outdoor Staff," could be left to that society. There is one paper on "Coke Oven Carbonization," and one on "Liquid Purification," and this does not strike one as a large representation of the work in manufacturing, purification, storage and distribution, that has been going on during the year. Where are the vertical retort people? And it is strange that carbureted water gas has received so little attention, considering the extent to which it has been introduced. The report also refers to the arrangements in progress for the National Gas Exhibition, to be held at Shepherds' Bush, during the month of October, and states that everything augurs well for the success of the undertaking. This will commemorate the Centenary of Gas Supply and the Jubilee of the Institution. Altogether there is rather a plethora of meetings this year. Members at a distance cannot get to London more than once in the year, and it might have been well if the Centenary and Jubilee part of the proceedings could have been deferred till the autumn, and held in connection with the Exhibition. Many will give the casting vote in favor of Shepherds' Bush, and consequently will not be present next week. A large part of the report is occupied by information respecting "Unemployment Insurance," under the National Insurance Act, 1911, a regulation that is quite unnecessary for the gas industry, as the employees are with few exceptions permanent. A man who has been in a regular employment for 20 or 30 years does not see the need for paying 2½d. a week as a security against unemployment, and the value of the labors of the Committee, which have resulted in eliciting the fact that none of the men engaged in manufacture, purification and distribution of gas come under the unemployment clause, is very evident, as several attempts were made to force it upon small country undertakings. Some received official notice that inspectors would attend to take names and addresses of workers. It is impossible to present anything like an adequate review of the various topics dealt with in the report, which extends to 41 pages.

There is a strong Carbonization Committee, comprising over a dozen members, but their attitude during the year appears to be simply that of sitting on the fence. All they have to report is that they have not yet been able to arrange for comparative tests to be made of different carbonizing systems under identical conditions. That there are considerable difficulties in the way of establishing identical conditions goes without saying; but it is not so obvious about the advantages of delay. The profession badly needs an official lead on this point, because only the works of the first magnitude are in a position to decide for themselves. Experiments in carbonization systems are beyond the means of the majority. Some excuse for the attitude of the Committee may be found in the fact that the matter is in a state of transition. Before we had time to get used to the inclined retort, various patterns of verticals, intermittent and continuous, were put forward, and these were quickly followed by the coke oven or chamber system. At the same time, several engineers are claiming, with the aid of heavy charging and stoking machinery, to be able to keep step with any of the other systems. The increasing demand for smokeless fuel makes it evident that the carbonizing system of the future will be one in which the quality of the residual in the retort or chamber receives prominent consideration. There has also been a great deal of talk about the extraction of benzol from coal gas, but this has been chiefly outside the practical domain of gas manufacture, and I have not heard of any practical attempt to supply the benzol market from the gas works. Other systems of carbonization appear to be heaving in sight, but it would be premature to attempt a discussion of them at present.

Another notable omission from the programme is the absence of any direct reference to gas for lighting. The usual rule is to direct the defence towards the place where the attack is heaviest, and a deficiency in this respect is apt to lead to the conclusion that there is no defence. The British Commercial Association have been running an effective advertising campaign on the uses of gas for cooking, hot water, baths, etc., this spring, and it is quite possible that they are reserving a similar effort on behalf of lighting to the autumn. But with petrol gas, incandescent petrol lamps, and electricity in view, it is evident that no other branch of gas consumption is subject to more fierce competition than that of lighting. It will be contrary to the facts to convey an impression that gas lighting is losing ground, as probably there was never a larger consumption for that purpose than at the present time. These remarks are offered on the lines that it it is easier to hold a position than to recapture it.

The largest spiral guided gas holder in the world has just been put into operation at Oldham. The tank is built of reinforced concrete, and is 40 feet 10 inches deep, or 40 feet to the water overflow, and 212 feet internal diameter. The thickness of the walls ranges from 7 feet at the bottom, to 3 feet 9 inches at the top, so there is ample provision for the extra strains on the tank due to the absence of guide framing and the usual piers or buttresses for supporting the same. The datum or ground level line is 5 feet below the overflow. There are 4 lifts, so, when fully inflated, the holder will rise some 150 feet, and will contain nearly 5½ million cubic feet of gas. It is interesting to notice that this is the fourth holder of the spiral guided pattern that has been erected at Oldham, and that the other three are all 4 lifts. The roof of the holder is of the untrussed pattern, and is supported, when out of use, by a framework erected in the tank, and no doubt the absence of a heavy framework at the crown of the holder adds to its stability when fully inflated. The cost of the holder and internal framework was about £24,000, and that of the tank, exclusive of inlet and outlet pipes, £13,000. This gives £4-15-0 per 1,000 cubic feet working capacity as the cost of the holder, £2-3-0 as that of the tank, with the omission just named. The inlet and outlet pipes and valves are necessary parts of the appliance, and as such should be included in the cost; but, after a fair allowance for these, it would appear that the total cost is under £10 per 1,000 cubic feet of working capacity, which is a moderate amount for that size of holder. The guide rails comprise 20 on the inner lift, 30 on the second, 40 on the third, and 60 on the outer lift, all attached to plates 12 inches wide by ⅜ inch thick, and secured to the sides of the holder at an angle of 45° to the vertical. They engage with cast steel rollers and mild steel carriages fixed to the dips on the lifts, and with cast iron base plates bolted to the top edge of the tank. The holder has been inflated since November, 1912, and has stood severe gales when nearly full.

There was an official inauguration last week, at which much interesting information with regard to the growth of business at Oldham, which has been the natural consequence of a vigorous forward policy, was given. Alderman Wilde, as Chairman of the Gas Committee, spoke of the advantage derived from the extensive showrooms recently opened. Whereas, up to 31st December, 1912, they had only fixed 869 gas fires, during the 5 months ended 31st May last they had

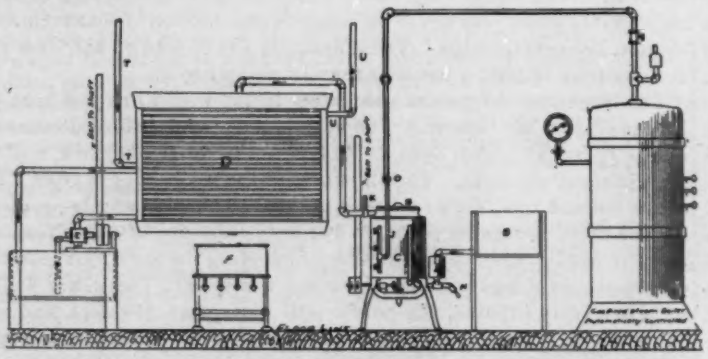
put in 246. Referring to the proposal to extract benzol from town gas, for disposal as a motor fuel, he said that at Oldham there were a larger proportion of flat flame burners in use than incandescent, and he thought that the motor industry would have to look elsewhere than to Oldham for any assistance in this direction. In this remark Ald. Wilde represented the very general opinion of gas engineers, who consider that benzol is too valuable a constituent to be profitably extracted from gas, and that the benzol market may be left to the coke oven people.

The pleasing character of the coloring of the new holder, which was a dark gray, was remarked upon, and this is in line with prevalent practice. At one time, bright red paint was too much in evidence on gasholders and gas plants generally, but this has given place to quieter shades of brown or gray. Particularly, now that holders are attaining Brobdingnagian proportions, this is something more than mere sentiment. Seeing they cannot be made things of beauty, they should be as non-intrusive as possible. Recently I saw a holder colored a very dark gray, and the framework with aluminum paint, and the effect was decidedly pleasing. The metallic tint lightened the appearance of a somewhat heavy lattice frame, and the gray formed a good background.

New Methods and Appliances.

A Typical Milk Pasteurizing Plant.—The following description of a pasteurizing plant and a test run, are taken from a paper by Mr. R. S. Hoffman, published in "Gas News," issued by the Baltimore Gas and Electric Company:

A discriminating public demands pasteurized milk, as it has been proven that raw milk contains microbes or bacteria, which are objectionable, to say the least. This objection is removed by heating the milk to a temperature of 140° to 145° F. and quickly cooling to 45° or 48°. To the dairyman or others who may not be altogether familiar with the process, the accompanying cut and data may be serviceable.



Raw milk is poured into the vat *B*: From there it enters the pasteurizer proper, *C*, through the small receiver, *I*. The pasteurizer is heated by a hot water jacket, steam coming through the pipe *J*, from the gasfired boiler. The steam is regulated by the valve, *O*, and the overflow pipe, *H*. The temperature of milk leaving the pasteurizer is indicated by the thermometer, *K*. By the stirring paddle in the pasteurizer the milk is thrown against the heated wall and is elevated by the centrifugal motion through the pipe, into the trough at top of cooler, *D*. It then drips through small holes in the bottom of the trough and is cooled by water which enters by the pipe, *T*, and is carried off by the pipe, *U*. Passing on down the cooler it is further cooled by ice water pumped from vat, *A*, by the circulating pump, *E*. The milk left in pasteurizer, *C*, after the motor is stopped, is drawn off through faucet, *N*, and poured into the cooler. From cooler, *D*, the milk passes into filler, *F*, where four bottles can be filled simultaneously.

The table shows a run made by a dairyman, assisted by a boy. The work was started at 2:15 P.M. by the boy lighting the gas burner under the boiler. At 2:30 the steam gauge hand had started to move. The dairyman did not appear until 2:50, at which time the boiler had 38 pounds steam pressure. At 2:55 steam was passed into the pasteurizer water jacket to heat it. This required 5 minutes. The milk was started through the pasteurizer at 3:05, and from that time on the steam pressure varied, owing to the varying quantity of milk in the pasteurizer. From 3:05 on, the assistant bottled the milk as fast as it left the cooler. We started with 2½ gauges of water, and no more water was put into the boiler. At 3:39, 1½ gauges of water had been evaporated. At 3:47 the gas was extinguished, the 47 pounds of steam pressure being sufficient to pasteurize the remaining milk. At 3:54 all the milk had been pasteurized, bottled and placed in the ice-box. The remaining steam was then used to furnish hot water, through a suction tee, for cleansing the premises, and for live steam sprayed directly on the cooling coils and milk containers. At 4:35 P.M. the dairyman had "nothin' to do 'till to-morrow."

PERFORMANCE OF 4 H.P. GAS FIRED STEAM BOILER IN CONNECTION WITH 1000 LB. REID PASTEURIZER.

TIME	PRESSURE	HOW TEST WAS CONDUCTED
2.15		GAS BURNER LIGHTED 2½ GAUGE WATER
2.30		STEAM GAUGE HAND MOVED
2.35	5 LBS.	
2.40	10 "	
2.46	25 "	
2.50	38 "	
2.55	50 "	OPENED STEAM VALVE TO PASTEURIZER WATER JACKET
3.00	52 "	CLOSED STEAM VALVE TO PASTEURIZER WATER JACKET
3.02	53 "	MILK PLACED IN RECEIVING VAT
3.03	58 "	
3.04	58 "	MILK STARTED THROUGH PASTEURIZER.
3.05	55 "	MILK CONTINUOUSLY RUNNING THROUGH PASTEURIZER
3.07	52 "	" " " " "
3.09	47 "	" " " " "
3.11	42 "	" " " " "
3.13	40 "	" " " " "
3.21	43 "	" " " " "
3.25	39 "	" " " " "
3.26	43 "	" " " " "
3.30	43 "	" " " " "
3.35	43 "	" " " " "
3.39	43 "	1 GAUGE WATER.
3.45	45 "	
3.47	47 "	GAS BURNER EXTINGUISHED.
3.54	35 "	FINISHED PASTEURIZING.
3.55	39 "	ALL MACHINERY STOPPED — NO WATER.
4.25	20 "	USED TO FURNISH HOT WATER AND STEAM OFF COOLER & VATS.
4.35	0 "	ALL WORK FINISHED.

CONDITIONS OF TEST.

INITIAL TEMPERATURE OF MILK TAKEN FROM 6 CANS	47°
WEIGHT OF MILK PASTEURIZED	660 LBS.
AVERAGE TEMPERATURE OF MILK LEAVING PASTEURIZER	148°
AVERAGE TEMPERATURE OF MILK LEAVING COOLER	47°
INDEX OF METER BEFORE TEST	0212.
INDEX OF METER AFTER TEST	0215
TOTAL GAS CONSUMPTION	300 CU FT
COST	$0.27
AVERAGE TEMPERATURE OF ATMOSPHERE DURING TEST	55°

WEATHER—CLEAR—MODERATELY HIGH WINDS. [illegible] 4-7-13.

Items of Interest
FROM VARIOUS LOCALITIES.

The National Incinerator Company, of New York, has been incorporated to take over the business established some years ago by Messrs. Lewis & Kitchen, of Chicago and Kansas City, Mo., the well-known heating and ventilating engineers. The Company manufactures and installs incinerators, actuated by gaseous fuel, for the complete and economical destruction of hotel, household and shop accumulations of rubbish, garbage, etc. The principal place of business is New York city.

Mr. M. C. Christiansen, since 1902 the capable and popular Cashier of the Citizens Gas and Electric Company, Cedar Falls, Ia., has been transferred to the Waterloo (Ia.) office of the holding corporation. Mr. J. H. Gaffney succeeds Mr. Christiansen at Cedar Falls, whose promotion advances Mr. J. R. Murray.

Mr. T L. Steward advises us that, some days ago, Judge Joseph M. Swearingen, in the Common Pleas Court, Pittsburgh, Pa., refused to change his prior decision declining to recall or dissolve an injunction against the defendant in the case of the Borough of Glenfield, Pa., and the first Presbyterian Church of Glenfield against the Manufacturers' Light and Heat Company, to restrain the latter from shutting off the gas supply to the churches of Glenfield. According to the tenets of the original ordinance, under which gas mains were laid in the streets of the borough, the churches, and the public buildings as well, were to have a gas service without charge. The practice prevailed for several years, but early this spring the Company served notice that, unless the gas was paid for thereafter, the supply would be stopped. An injunction to prevent such action was secured, which instrument was upheld by the Supreme Court. Meanwhile the Borough Council adopted a new ordinance, modifying the terms of the contract with the Company, but, notwithstanding such ordinance, the Court rules that the churches, *per conto observanda*, are entitled to the service without charge therefor.

The La Crosse (Wis.) Gas and Electric Company, through Vice-President Owens, naturally has often to come in contact with the authorities of that city; notably, of course, with his Honor the Mayor (Mr. O. J. Sorenson), an official whose cleverness is on a parity with his affability—the rating being 100. Mrs. Sorenson, too, numbers at

least 50 per cent. in the management of the Mayor's home citadel, and in the latter connection, with the idea that matters in her kitchen might be ameliorated, she was recently made the recipient of the following complaint and summons, both instigated by Manager Owens and the La Crosse Gas and Electric Company—the matter explains itself:

Mrs. O. J. Sorenson, 123 South 11th street, City—Dear Madam: There have been many complaints entered to the Associated Charities, and to the Humane Society as well, that you have been suffering for years for the lack of a gas stove in your house. By a recent order of the Court we are requested to send a gas stove to your house, such as you may need in your kitchen. You are ordered to come to our place of business and select a stove; and your husband will be made to pay for any stove which you may select.

THE Cambridge (Mass.) Gas Light Company will move to its handsome office quarters on Temple street to-morrow.

THE Benjamin F. Smith Company has been awarded the contract for the construction of the new storage house that the Pawtucket (R. I.) Gas Company has arranged to construct on the easterly side of the approach to its plant by the New York, New Haven and Hartford Railroad tracks. The structure will have these dimensions: Length, 190 feet; width, 60 feet; height (2 stories), 29 feet. It is to have a basement of concrete, mill construction.

"B. V. R.," writing from Holyoke, Mass., under date of the 21st inst., says: "Last week the Board of Selectmen, South Hadley Center, Mass., discussed a petition (it was signed by 50 prominent people of that place) praying the Board to grant the right to pipe the streets for a gas supply by the Springfield Gas Light Company. Strange to say, much opposition to such granting was developed; and, stranger still, the non-agreers built their opposition on the queer foundation that some of the 'Center folks' had years ago organized a corporation for the manufacture and supply of acetylene gas from a central station. I do not know how many years ago this action was initiated, but no matter how far or near such date was or is to-day, I must congratulate them that the plant (and those who operate it) are still on earth; but it is only a question of time when its 'violent ascent' will be chronicled. The Springfield folks will not 'take over' the acetylene outfit, so we presume the non-owners will have to wait for a stable supply of gas until the inevitable happens."

THE New York Public Service Commission for the Metropolitan District has assented to the petition of the Consolidated Gas Company, entitling it to purchase 12,500 shares each of the preferred and common stock of the New York and Queens Electric Light and Power Company, Flushing, L. I.

THESE rates are effective to-morrow, on supply of gas and electric current by the the Baltimore Consolidated Gas, Electric Light and Power Company: For residence service, under 50,000 cubic feet per month, 90 cents per 1,000, less 10 cents for prompt payment—old rate $1, less 10 cents. Over 50,000 and not in excess of 100,000 cubic feet per month, 85 cents, less 10 cents; over 100,000, 80 cents, less 10 cents—in effect a cut all round of 10 cents. On electric account, 8½ cents per kilowatt hour, instead of 10 cents. A minimum charge of $1 per month is rulable; the former minimum was $12 per annum.

THE Lo Angeles (Cal.) Gas and Electric Corporation in 1912 enjoyed a gross income of $4,284,809, and a net of $1,81 ',126. The total assets of the Company, as of December 31, 19 2, are returned at $20,344,511.

IN the Superior Court of Connecticut, Bridgeport district, Judge William S. Case presiding, the argument of counsel for a non-suit order for defendant (the Bridgeport Gas Light Company) was upheld, in the case of a damage suit under an action instituted by Louis Korb, administrator. The plaintiff having rested his case, Judge Case, on plea of counsel, ordered a non-suit on the ground that sufficient *prima facie* evidence had not been presented to warrant a continuance. The Company was impleaded in three actions, in the sum of $5,000 each, for deaths brought about through the inhalation of illuminating gas by John Horcbarick, John Kepessac and John Prevosick, while asleep (the night of October 29, 1911), on the premises, 271 Helen street, Bridgeport. Negligence on the part of the sufferers was alleged in defense, which view was sustained by the Court.

GEN. GEORGE H. HARRIES, President of the Louisville (Ky.) gas and electric lighting properties, announces that on the 2d prox., or as soon thereafter as possible, the title of the succeeding merging factors shall be that of the Louisville Gas and Electric Company.

"MR. JOHN E. KELLEHER, new business representative of the Marlboro-Hudson (Mass.) Gas Company, seems to be quite successful along other lines. And we judge so from the fact that he was possessed of sufficient eloquence to induce Miss Loretto King, of Marlboro, to accept his name in exchange for hers. The exchange was registered the afternoon of the 18th inst., on the parish records of the Church of the Immaculate Conception, Marlboro, the pastor (Rev. T. B. Lowney) acting as Recorder. A reception in the home of the bride's parents on Ringold street followed, after which Mr. and Mrs. Kelleher were on their way to Old Point Comfort, Va., for a two weeks' tour in and about 'The old Virginia shore.' Good luck to them."—B. V. B.

AT a recent meeting of the St. Clair Heights (Mich.) Council it was voted to permit the Detroit City Gas Company the right to lay mains in the named place, under the existing restrictions of the village in respect of such work.

"MR. CHAS. H. TENNEY, President of the Springfield (Mass.) Gas Light Company, returned a week or so ago from a 6 weeks' vacation trip, to and through sections of England and France. Mrs. Tenney, who accompanied him, was greatly interested in a textile exhibition that was stirring things up greatly in the famous old city of Ghent. —T. S. R."

MR. JOSEPH R. GILKYSON, General Manager of the South Jersey Gas, Electric and Traction Company, from the time of its inception until its absorption by the Public Service Corporation of New Jersey, died in the Jefferson Hospital, Philadelphia, the evening of the 18th inst., to which he was removed from his home in Camden, suffering from a complication of diseases. Deceased was born in Yardley, Pa., November 18, 1854, and graduated from Swarthmore College, in the Class of 1870. On graduating he entered the service of the Pennsylvania Railroad, and speedily became prominent in the surveying division of the Company. Later on he was made freight agent in Trenton, and here (at the instigation of Gen. Burleigh and Col. Kuser) he became connected with the South Jersey Gas Company at about the time the Elkins combination succeeded in acquiring the Chambers' interest in the old Trenton Gas Light Company. In this service he remained until about 1903, when be became Secretary and Treasurer of the Amies Road Company. He was prominent in the Republican politics of the State, was a charter member, Trenton Conclave, No. 143, Improved Order of Heptasophs; was prominent in Masonry, and was a valued member of Capital City Council, No. 392, Royal Arcanum. He is survived by his wife and a brother.

THE proprietors of the Bisbee (Arizona) Improvement Company, who are the owners of the gas and electric lighting properties in that settlement, report that they have, so far this season, disposed of 7 carloads of ranges, all of which should be noted as pretty positive evidence of what the average Bisbee resident thinks respecting gaseous fuel.

"V. R. T.," writing from San Francisco under date of the 19th inst., says: "Well, we lost Neill Slattery from the active ranks of the Pacific Gas and Electric Company; but he will remember the send-off we gave him in a noted downtown café some evenings ago, for many a moon when watching the Pacific waves wash the beaches of far-away Honolulu. Neill goes there to take charge of the Honolulu (Hawaii) Gas Company's gas arc service. I will not attempt to describe that which was done to him in the café; but it will be enough to remark that he got his, all right! May his shadow never grow less; and I, for one, am more than gratified over his promotion, even if it does take him so far from us. However, no matter where he goes, Neill will always know that the boys are wishing him well."

MR. JOHN T. YOUNG, General Manager of the Muskegon (Mich.) Traction and Lighting Company, succeeds Mr. Victor F. Dewey as General Manager at Grand Rapids, Mich.

WITH much regret we report the sudden death (on the 13th inst.), of ex-Alderman James P. B. Ricketts, for over 40 years in the service of the New Haven (Conn.) Gas Light Company, a good part of the time in the responsible position of works' foreman, and for the past two years on the Company's retired list. He was in his 65th year, and is survived by his wife and six children.

MR. CHAS. E. DRUHOT, for a score of years on the works' staff of the Bass Foundry and Machine Company, Fort Wayne, Ind., has joined the field force of the Western Gas Construction Company.

The Market FOR GAS SECURITIES.

The Lauterbach-Lamar, etc., reports as to telephone conversations with Washington lawmakers, over how easy it was, provided the right parties were retained, to mould legislation, seem to have knocked off 1 point from Consolidated values! However, whether so or not, Consolidated came in to day (Friday) at 128½ to 129. Much rumpus was occasioned by the publication of the fact that the Consolidated borrowed the trifle of 15 million last week. Wiseacres want to know why it should be a borrower of such a large sum. Well, one good slice of the 15 goes to pay for shares recently acquired in the Company supplying artificial lighting mediums in the Flushing district of Long Island and other places "adjacent thereto," and contiguous thereof to its Astoria environs. Some of the millions are thus accounted for. Possess your souls in patience, Messrs. Investors, until the New York Light, Heat and Power eventual distribution is made.

Brooklyn Union is 123 to 129, and sales were made in it about mid-value of the quotations. Rumor has it that the Company is looking longingly at the properties of the Kings County Lighting Company. Fifteen years ago the Company could have bought the properties of the former (it was then known as the Kings County Gas and Illuminating Company) for $500,000. It will cost quite something more to-day. Washington gas is at the high quotation of 435 to 436½. The Company has at last secured a worthy successor to the late Mr. George A. McIlhenny in its managerial-engineering division in the person of Mr. Peter Young, formerly of the Astoria (N. Y.) Company. An accomplished gentleman, a born diplomat and a finished engineer. Mr. Young joins the Washington Company with the task confronting him of building a modern plant for the Company on Analostan Island. However, he is amply able to cope with the possibilities.

The gas share market is wobbly with the uncertainties of the present market, but the outlook is decidedly promising. Now is the time to buy.

Treasurer Bailey, of the Baltimore Company, has notified the holders of Collateral Trust 5's, due to-morrow, will be redeemed upon surrender after such date by the Continental Trust Company, of Baltimore, at $1,025 per note. Interest ceases after the first July.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

115 BROADWAY, NEW YORK CITY.

JUNE 30.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par alue of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked*
Consolidated Gas Co.	$99,816,500	100	128¼	129
Central Union Gas Co. — 1st 5's, due 1927, J. & J.	8,500,000	1,000	101	103
Equitable Gas Light Co.— Con. 5's, due 1932, M. & S.	1,000,000	1,000	105	106
Mutual Gas Co.	3,600,000	100	157	157
New Amsterdam Gas Co.— 1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	99	101
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	59	63
1st Mtg. Gold Bds. 5 p. ct.	1,500,000	—	96½	100½
New York and East River— 1st 5's, due 1944, J. & J.	3,500,000	1,000	103	105
Con. 5's, due 1945, J. & J.	1,500,000	—	96	100
Northern Union— 1st 5's, due 1927, J. & J.	1,250,000	1,000	100	102
Standard	5,000,000	100	102	104
Preferred	5,000,000	100	90	100
1st Mtg. 5's, due 1930, M. & N.	1,500,000	1,000	103	105
The Brooklyn Union	15,000,000	1,000	123	129
1st Con. 5's, due 1948, M. & N.	15,000,000	—	106¾	107
Yonkers	299,840	500	180	—
Out-of-Town Companies.				
Binghampton Gas Works	450,000	100	—	—
" 1st Mtg. 5's	509,000	1,000	97	100
Boston United Gas Co.— 1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47¾	50
Buffalo City Gas Co.	5,500,000	100	5	8
Bonds, 5's	5,250,000	1,000	59	60
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,600,000	1,000	104	106¼
Cincinnati Gas and Electric Co.	29,500,000	100	87	90
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	86
Bonds, 1st 5's	3,822,000	1,000	96½	99
Laclede Gas Co., St. Louis	10,000,000	100	93	94
Preferred	2,500,000	100	—	102½
Bonds	10,000,000	1,000	102½	103
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	120	120
Madison Gas and Electric Co. " 1st Mtg. 6's	400,000	1,000	106	
Massachusetts Gas Companies, of Boston	25,000,000	100	90	91
Preferred	25,000,000	100	87	89
Montreal L. H.& P., Canada	9,000,000	100	210½	211¼
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	97	98
Bonds, 6's	6,000,000	—	127	128
New Haven Gas Co.	5,000,000	25	182	190
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	107¾	108¼
1st Mortgage	20,100,000	1,000	102	102½
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,150,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105¼
Pacific Gas and Electric Co.	15,500,000	—	39	40
St. Joseph Gas Co.— 1st Mtg. 5's	1,000,000	1,000	96	98
St. Paul Gas Light Co.	2,500,000	100	—	—
1st Mortgages, 6's	650,000	1,000	104	106
Extension, 6's	600,000	1,000	112¾	115
General Mortgage, 5's	3,447,000	1,000	94	96
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	101	103
Washington (D. C.) Gas Co.	1,600,000	200	435	436½
1st Mortgage, 6's	600,000	—	—	—
Western Gas Co., Milwaukee	4,000,000	—	—	—
Wilmington (Del.) Gas Co.	600,000	50	—	—

$2,000,000

Cities Service Company

Seven Per Cent. Five-Year Coupon Convertible Gold Notes

Dated May 15, 1913 Denominations $100, $500, $1,000

Interest January 1st and July 1st, payable at office of

HENRY L. DOHERTY & COMPANY

Sixty Wall Street, New York

or at office of SPERLING & CO., London, England

Issued under a Trust Agreement (Equitable Trust Company, New York, Trustee)

Total Authorized, $10,000,000 To be issued at this time, $5,000,000

$3,000,000 of the notes have been sold in London.

A large portion of the remainder has been taken by the Company's American stockholders.

The safety of these notes as an investment cannot be questioned, as the market value of the Company's Preferred and Common stocks overlying these notes was over Eighteen Million Dollars on May 31st, 1913, or more than three and one-half times the total amount of notes now being issued. The net earnings of the Company for the twelve months ending May 31st, 1913, were $1,334,921.95, or more than three and three quarter times the interest on these $5,000,000 of notes.

The Company's undistributed surplus May 31st, 1913, was $835,031.28.

Since organization of the Company in October, 1910, monthly dividends have been paid on Preferred stock at six per cent. per annum, and monthly dividends are now being paid on Common stock at five per cent. per annum.

These notes are subject to call at 102 and interest on thirty days' notice, and are convertible at any time prior to redemption or maturity into Cities Service Company Preferred stock at par.

Having already sold the major portion of this offering of $2,000,000, we now offer the unsold remainder at

PAR AND ACCRUED INTEREST.

Descriptive circular and subscription blank furnished on request.

HENRY L. DOHERTY & COMPANY

Sixty Wall Street New York

CONSOLIDATED GAS PURIFICATION AND CHEMICAL CO.

A
GOOD
NEW
YEAR
RESOLUTION

TO
USE
ONLY

"Ferox"

IN
NEW
AND
OLD
PURIFIERS
DURING
THE
YEAR

1913.

CONSOLIDATED GAS PURIFICATION AND CHEMICAL CO.,

NASHVILLE, TENNESSEE. AND 103 PARK AVE., NEW YORK.

H. N. BRADLEY, PRESIDENT.

A. S. B. LITTLE, GENERAL MANAGER.

HERBERT SENGER, EASTERN REPRESENTATIVE.

THE GAS MACHINERY CO.
CLEVELAND, OHIO.

GAS PLANTS, GAS WORKS APPARATUS,
COAL GAS BENCHES with SILICA RETORTS and SETTINGS,
COKE OVENS, GAS OVENS, PRODUCERS,
WATER GAS APPARATUS,
OIL GAS APPARATUS,
REHEATERS for SULPHUR REDUCTION,
GAS VALVES, TAR EXTRACTORS,
AMMONIA CONCENTRATORS, AQUA AMMONIA STILLS,
TAR STILLS, BY-PRODUCT MACHINERY,
TAR and AMMONIA WASHERS, CONDENSERS,
SHAVING SCRUBBERS, AMMONIA SCRUBBERS,
PURIFIERS.

More Gas with Less Fuel.
HIGHER HEATS WITH LONGER SERVICE.

A Few of the Advantages of

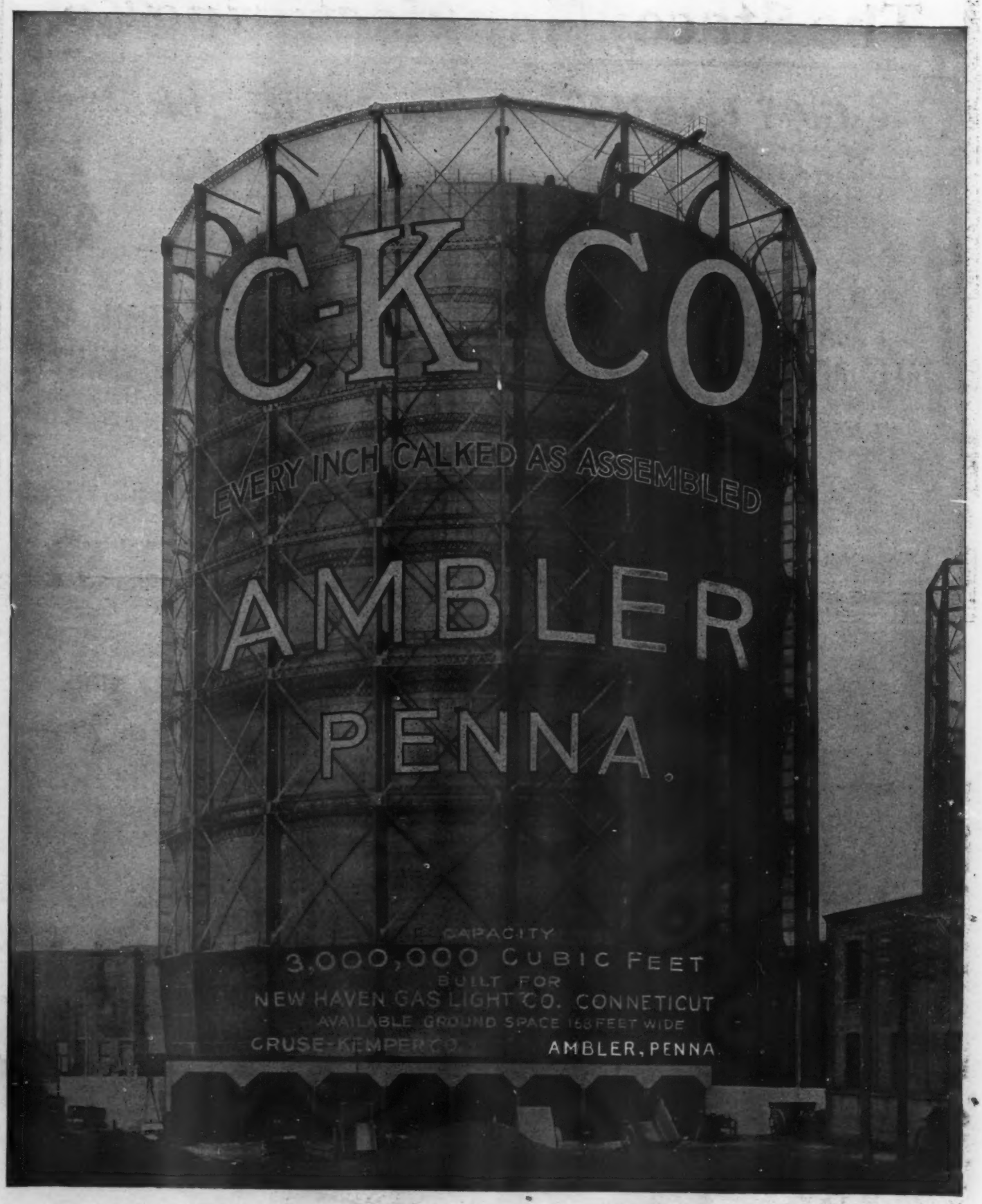
Silica Sectional Retorts and Settings

furnished by

James Gardner, Jr., Co.
Bolivar, Pa.

We early realized the superiority of silica over fireclay for benches and have been supplying silica settings since 1900. All silica material for 20 through benches of eights for Laclede Gas Light Company, St. Louis, Mo., furnished by us in 1910.

Giving satisfaction wherever installed. Write us for prices.


C-K CO
EVERY INCH CALKED AS ASSEMBLED
AMBLER
PENNA.
CAPACITY
3,000,000 CUBIC FEET
BUILT FOR
NEW HAVEN GAS LIGHT CO. CONNETICUT
AVAILABLE GROUND SPACE 168 FEET WIDE
CRUSE-KEMPER CO.
AMBLER, PENNA.

Established 1851.

The Stacey Manufacturing Co.

GAS ENGINEERS AND BUILDERS.

GAS HOLDERS
Of All Sizes and Types

PLATE AND STRUCTURAL WORK OF EVERY DESCRIPTION.
ALL IRONWORK AND APPARATUS REQUIRED IN A GAS PLANT.

"CHOLLAR'S" PATENTED SYSTEM OF GAS PURIFICATION.

Estimates Cheerfully Furnished.

CINCINNATI, OHIO.

Western Agents: THE W. F. BOARDMAN CO., No. 718 Mission Street, San Francisco, Cal.

PURIFIERS.

We build all kinds and sizes of purifiers, for both inside and outside erection.

GAS ENGINEERING CO.,

TRENTON, N. J.

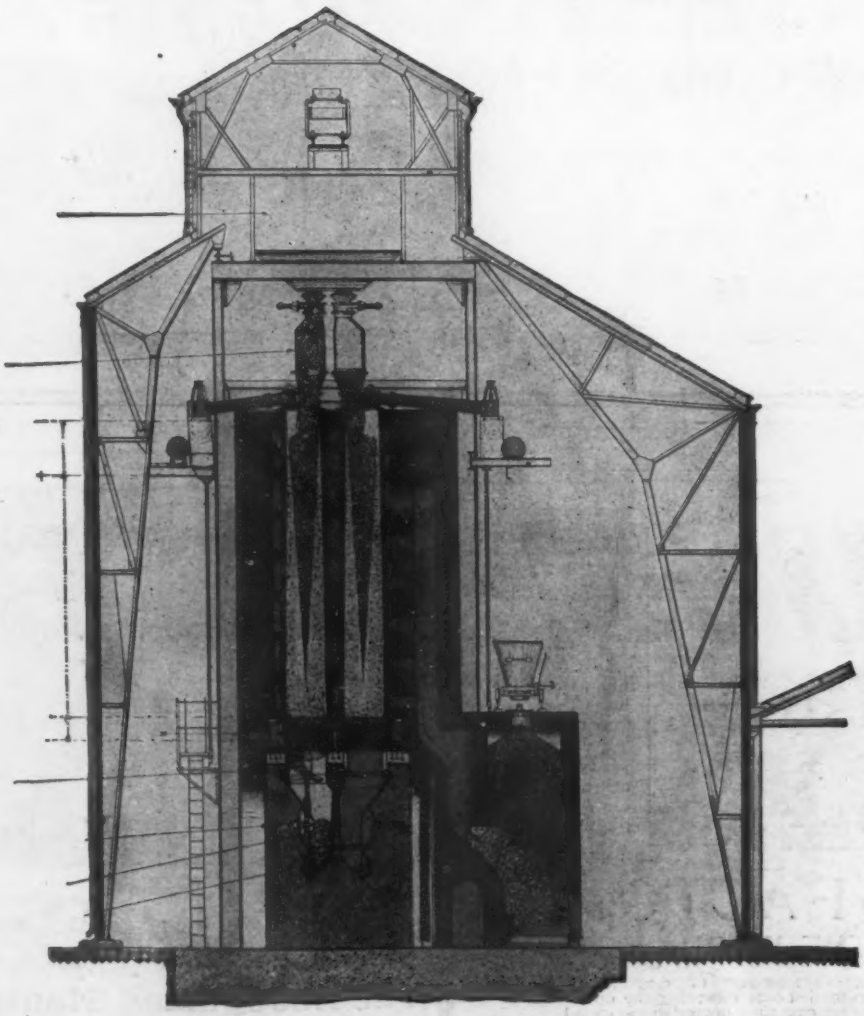
DIDIER-MARCH COMPANY

WORKS: KEASBEY, PERTH AMBOY, N. J.

GAS ENGINEERS.

MAIN OFFICE: PERTH AMBOY, N. J.

GLOVER-WEST SYSTEM OF Vertical Retorts.



Installations at Manchester, St. Helens, Rochdale, Tokio, Belfast, Newcastle, Darlington, Oldham, Stockholm, Leicester, Sydney, Nelson, Bradford, etc., etc., etc.

1,000 Retorts, with a total producing capacity of over 30,000,000 cubic feet per day, now in operation and under construction.

SECOND INSTALLATION IN THE UNITED STATES

NOW UNDER CONSTRUCTION AT FITCHBURG, MASS.

HORIZONTALS AND INCLINES OF APPROVED TYPES.

COMPLETE COAL GAS INSTALLATIONS.
RETORT HOUSES.
COAL AND COKE HANDLING MACHINERY.

HIGH CLASS REFRACTORY MATERIALS.
GAS BENCH AND COKE OVEN SETTINGS.
LININGS FOR WATER GAS SETS AND CUPOLAS.

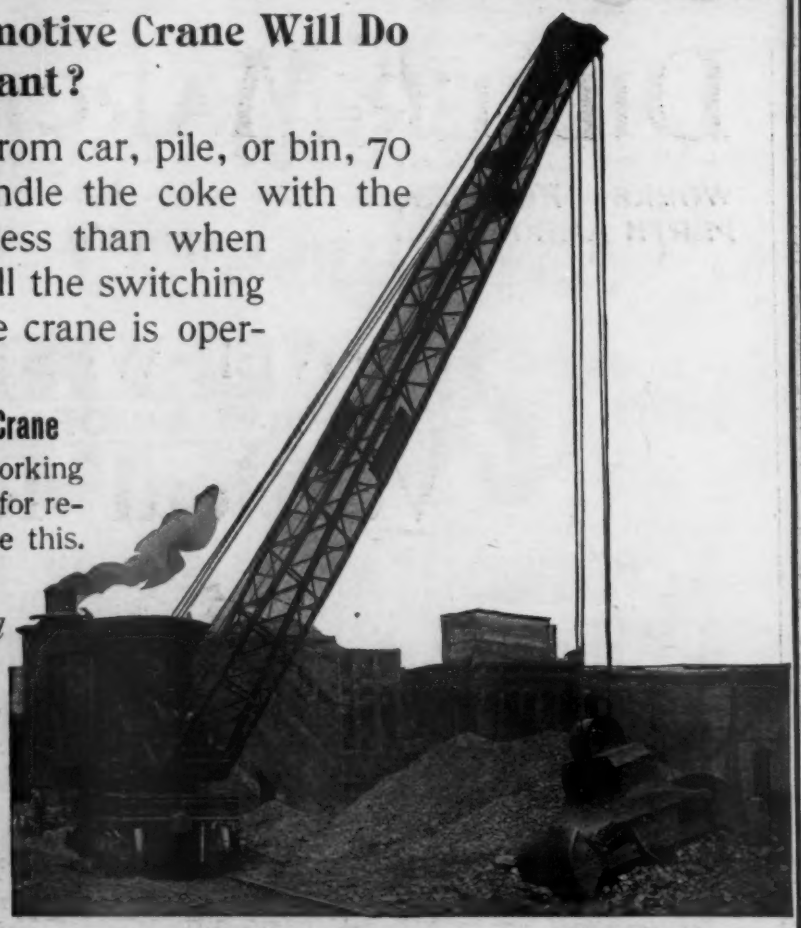
Do You Realize what a Locomotive Crane Will Do for a Gas Plant?

It will handle any kind of coal from car, pile, or bin, 70 to 100 tons per hour, it will handle the coke with the least amount of breakage, even less than when handled by hand, and it will do all the switching of the cars in the yard. And the crane is operated by just one man.

Gas Plants Use the Brownhoist Locomotive Crane

because they can depend upon this crane working continually day and night without stopping for repairs. The crane's numerous records prove this. Ask the man who has one.

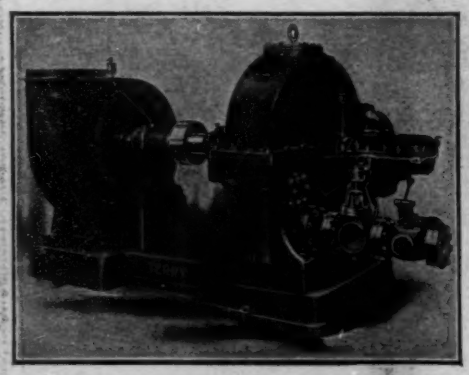
Write for catalog K, which shows how and where the crane is used.



THE BROWN HOISTING MACHINERY CO.,

CLEVELAND, OHIO.

New York, Pittsburg, Chicago, San Francisco.



Terry High Pressure Type Gas Blower Set

The capacity of this set is 14,000 cu. ft. per minute against 40 ins. W. G. The Terry Standard Type has a capacity of 18,000 cu. ft. per minute against 24 ins. W. G.

"SATISFACTORY" IS THE WORD

In a recent investigation among users of Terry Turbine Gas Blower Sets we compiled data regarding the operation. In practically every case their operation was stated as "satisfactory." The report covered 70 Terry Turbine Gas Blower Sets which, with the exception of two, had not given any trouble whatsoever, and in these cases the trouble was of a minor nature easily overcome.

TERRY TURBINE GAS BLOWER SETS

require practically no attention, while the oil and cost of upkeep are almost negligible. They occupy small space and no special foundations are needed. They operate against high back pressures without leakage, and as the exhaust steam is free from oil it may be used for manufacturing purposes.

Send for Booklet No. 12 and "Terry Service."

The Terry Steam Turbine Co.

Home Office and Works: HARTFORD, CONN. **Agencies in All Principal Cities.** **General Sales Office: 90 WEST ST., NEW YORK.**

32-118

Peck Carrier

The Recognized Standard Conveyor

of the modern power house for

Coal and Ashes

The illustration shows a Peck Carrier handling coal in power house of Armour & Co., South Omaha, Neb. The same conveyor removes the ashes.

Write for Catalog No. 81

LINK-BELT COMPANY

Philadelphia	Chicago	Indianapolis
New York . . 299 Broadway	St. Louis . Central Nat'l Bank Bldg.	
Boston . . 131 State Street	Seattle . . 512½ First Ave., S.	
Pittsburgh . 1501-3 Park Bldg.	Denver . Lindrooth, Shubart & Co.	
New Orleans Wilmot Machinery Co.	San Francisco N.D. Phelps, Sheldon Bldg.	
Buffalo . . 606 Ellicott Square	Minneapolis . Link-Belt Supply Co.	
Birmingham General Machinery Co.	Los Angeles . Security Bldg.	

KEEPING GOOD COMPANY

When you send a message to a man on your letter head the consideration he gives it will be largely determined by his knowledge of your company.

The continuous appearance of your announcements in your customers' weekly paper will increase the interest in your goods and the prestige of your house, as your advertising message in the JOURNAL will reach him in GOOD COMPANY.

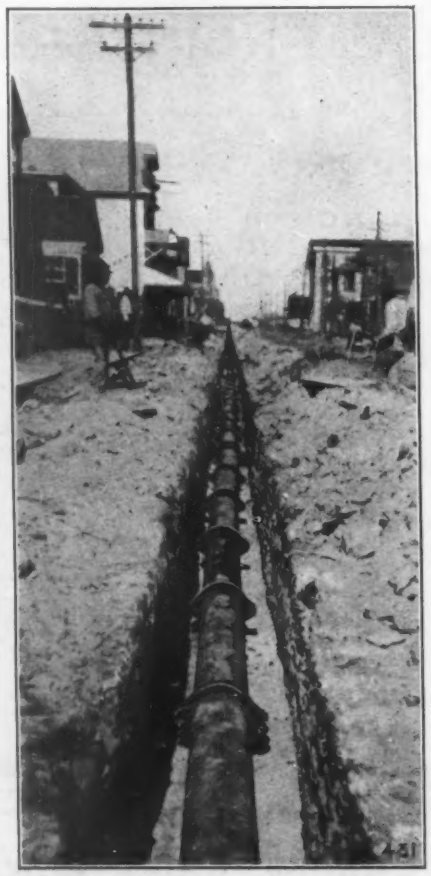
Keeping good company is one of the reasons why advertising in the

American Gas Light Journal

PAYS!

RESERVE SPACE TO-DAY

UNIVERSAL PIPE



THE above photograph shows a section of the Universal Pipe lines in the service of the Key West Gas Company, Florida.

This installation comprises 30 miles of 2, 4, 6, 8, 10 and 12-inch pipe, all now in use. The lines were laid under flood conditions, but without delay or trouble. The only tool required to make up the Universal Joint is a ratchet wrench. That means speed and economy.

THE CENTRAL FOUNDRY COMPANY
30 WEST ST. NEW YORK

U-31

J. S. DeHART, JR.
PRESIDENT

A. F. WEHNER,
SECRETARY

R. K. WEHNER,
TREASURER

ISBELL-PORTER COMPANY

GAS ENGINEERS & BUILDERS OF GAS WORKS

BENCH WORK

CHARGING AND DISCHARGING MACHINERY

MACKENZIE EXHAUSTERS

PRIMARY AND SECONDARY CONDENSERS FOR FRESH OR SALT WATER

ISBELL VALVES SPECIALS

TAR EXTRACTORS

P. & A. TAR EXTRACTORS FOR WATER GAS

ROTARY AMMONIA SCRUBBERS

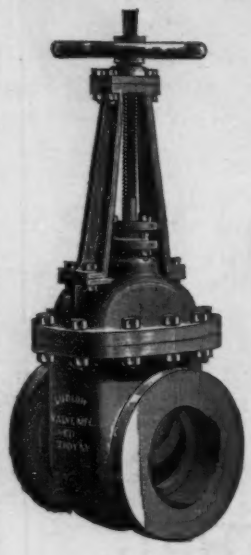
SHAVING SCRUBBERS PURIFIERS STREET GOVERNORS

MAIN OFFICE AND WORKS
BRIDGE & OGDEN STREETS
NEWARK, N. J.
ESTABLISHED 1865

The Ludlow Valve Mfg. Co.,

TROY, N. Y.

HOT GAS VALVES A SPECIALTY.



Genuine Ludlow Gate Valves,

ALL STYLES, ANY PRESSURE,

FOR

Gas, Water, Steam, Oil, Ammonia, Etc.

Send for Catalog.

BRANCH OFFICES:

New York. Chicago. Philadelphia.
Kansas City. Pittsburgh.

PUBLIC LIGHTING TABLE FOR JANUARY, 1913

COMMUNICATED BY THE AMERICAN METER COMPANY.

Day of Week.	MOONLIGHT SCHEDULE.		
	Date.	Light.	Extinguish.
Wednesday	1	5.20 P.M.	3.50 A.M.
Thursday	2	5.20	5.00
Friday	3	5.20	6.20
Saturday	4	5.20	6.20
Sunday	5	5.20	6.20
Monday	6	5.20 N.M.	6.20
Tuesday	7	5.20	6.20
Wednesday	8	5.20	6.20
Thursday	9	5.20	6.20
Friday	10	5.20	6.20
Saturday	11	8.00	6.20
Sunday	12	9.00	6.20
Monday	13	10.00	6.20
Tuesday	14	11.00	6.20
Wednesday	15	12.10 A.M. F.Q.	6.20
Thursday	16	1.10	6.20
Friday	17	2.20	6.20
Saturday	18	3.40	6.20
Sunday	19	4.50	6.20
Monday	20	5.50	6.20
Tuesday	21	No L.	No L.
Wednesday	22	No L. F.M.	No L.
Thursday	23	No L.	No L.
Friday	24	5.40 P.M.	8.50 P.M.
Saturday	25	5.40	10.10
Sunday	26	5.40	11.20
Monday	27	5.40	12.30 A.M.
Tuesday	28	5.40 L.Q.	1.40
Wednesday	29	5.40	2.50
Thursday	30	5.40	4.00
Friday	31	5.40	5.10

THE UNITED GAS IMPROVEMENT COMPANY,

PHILADELPHIA.

—•—

BUILDERS OF

THE STANDARD DOUBLE SUPERHEATER

LOWE WATER GAS APPARATUS.

—•—

ACCURATE MEASUREMENT

OF

AIR AND STEAM SUPPLY

(PATENTED),

AFFORDING { PERFECT CONTROL OF GENERATOR FIRE CONDITIONS.

PRODUCING { UNIFORM RESULTS. HIGHEST EFFICIENCIES.

BERWIND-WHITE COAL MINING COMPANY'S

Ocean Westmoreland Gas Coal.

Offices:
Washington Building, New York.
Arcade Building, Philadelphia.

STRICTLY High Grade. . . . .
Carefully Prepared.
For Gas Making or
Heavy Steaming. .

A. C. M. AZOY,
General Agent and Manager Gas Coal Department,
No. 1 Broadway, New York.

Bronder Patent Stoking Machinery.

Three-Scoop and Three-Rake Charging and Discharging Machines are operating in New York, Newark, N. J., Philadelphia, Worcester, Mass., Mt. Vernon, N. Y., Toronto and Montreal, Canada, Detroit, Seattle, Rochester and St. Louis.

Four-Scoop and Four-Rake Charging and Discharging Machines are operating in Detroit, Mich., and Cincinnati, Ohio. These are the only machines that will draw or charge simultaneously 3 or 4 retorts (vertically) and handle from 42 to 60 retorts in from 25 to 30 minutes, lid opening and closing and filling of furnaces included.

Hot Coke Conveyor, Quencher and Steam Exhauster, operating in Toronto, Canada, working in water-sealed flue, rollers being protected from heat and grit.

COAL CRUSHERS, CONVEYORS AND BINS. TURNTABLES FOR MACHINES.

Labor-Saving Machines for Handling Coal and Coke from Coal Cars to Coke Yard or Bins. Coke Screening and Measuring Plants a Specialty.

G. A. BRONDER,
Contracting Engineer and Builder,
809 BROADWAY, NEW YORK.

KERR MURRAY MANUFACTURING COMPANY,

Engineers and Manufacturers

APPARATUS FOR COAL GAS PLANTS,

SINGLE AND DOUBLE-LIFT GASHOLDERS
AND STEEL TANKS,

Latest Improved

ROTARY EXHAUSTERS, P. & A. TAR EXTRACTORS, AMMONIA WASHERS,

CONDENSING, SCRUBBING AND PURIFYING APPARATUS.

Street Specials and Valves.

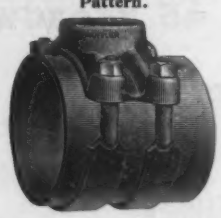
ADDRESS:

KERR MURRAY MANUFACTURING COMPANY, FORT WAYNE, IND.

Mueller Century Pattern.

Mueller Century Pattern Combined Clamp and Tee.

Mueller Improved National Pattern.



Don't take any risk in tapping corroded mains,

Use Mueller Service Clamps.

If a main is light or is affected by corrosion so that there is any danger in tapping it, it should by all means be reinforced by a Service Clamp.

Mueller Service Clamps are strapped tight on the main, insuring absolute safety in tapping mains that could not be tapped without a clamp.

They are UNCONDITIONALLY GUARANTEED because they are made of best quality malleable and cast iron--correctly designed to distribute the right amount of metal to insure greatest strength. Made for any size main up to 12-inch.

TRADE MARK MUELLER REGISTERED

Works and General Offices, DECATUR, ILL., U. S. A. West Cerro Gordo St.

H. MUELLER MFG. CO.

Eastern Division, NEW YORK, N. Y., U. S. A. 254 Canal St. (cor. Lafayette).

High Pressure Regulator.

THE TENDENCY IS TOWARD INDIVIDUAL PRESSURE GAS REGULATORS.

LET US TELL YOU ABOUT OUR HIGH AND LOW PRESSURE REGULATORS.

Reliance Gas Regulator & Machine Co.,

PASADENA, CAL.

ESTABLISHED 1896.

PACIFIC COAST AGENTS: W. F. BOARDMAN COMPANY, SAN FRANCISCO, CAL.

EASTERN AGENTS: GRIMM & COMPANY, 622 HARRIS TRUST BLDG., CHICAGO, ILLS.

S. Pemberton Hutchinson, President. H. C. Adams, 1st Vice-Pres. Chas. F. Godshall, 2d V.-P. & Treas. Henry Wharton, Secretary. C. B. Nichols, Ass't Sec'y.

—THE—

WESTMORELAND COAL CO.

Chartered 1854.

Mines Situated on the Pennsylvania and the Baltimore and Ohio Railroads, in Westmoreland County, Pa.

POINTS OF SHIPMENT:

PHILADELPHIA, BALTIMORE, SOUTH AMBOY, N. J., WATKINS (SENECA LAKE), N. Y.

Since the commencement of operations by this Company its well-known Coal has been largely used by the Gas Companies of New England and the Middle States, and its character is established as having no superior in gas-giving qualities, and in freedom from sulphur and other impurities.

Principal Office, 224 South 3d St., Philadelphia, Pa

Established 1858. Incorporated 1890.
CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas. H. D. ABERNETHY, Sec.

J. H. GAUTIER & CO.,
Jersey City, N. J.
COAL GAS BENCHES
Designed For
FUEL ECONOMY, YIELD, SERVICE.
Clay Gas Retorts, Fire Brick, Water Gas Linings, Etc.
Our Products Sold in NEW ENGLAND by
WALDO BROS., BOSTON, MASS.,
At 45 Batterymarch Street.

HIGH PRESSURE WORK.

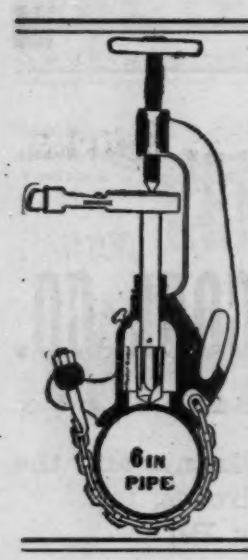
We have made a specialty of laying mains for high pressure distribution for GAS COMPANIES.

Advise us of your proposed extensions. Estimates furnished.

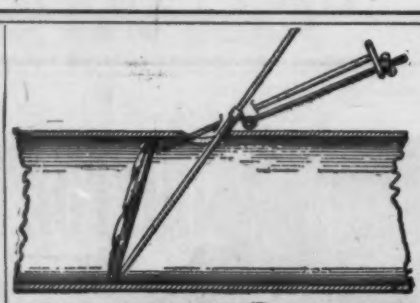
SULLIVAN BROTHERS,
45 MAIN STREET,
FLUSHING, N. Y.

THE PARKER-RUSSELL MINING AND MFG. CO.,
St. Louis, Mo., 500-508 Liggett Bldg. New York Office, 45 Broadway.

GAS RETORT BENCHES, Horizontals, Verticals, Inclines.
Longest Life---Largest Output per Retort---Lowest Fuel Results---Greatest Ease of Operation.
WATER GAS LININGS.
STOKING MACHINES, FIDDES-ALDRIDGE DISCHARGING CHARGER.
WOODALL-DUCKHAM, CONTINUOUS SYSTEM OF VERTICAL RETORTS.
LARGE STOCK OF RETORTS AND SETTINGS ON HAND.
ALL OUR WARES ARE MANUFACTURED AT OUR OWN PLANT FROM CLAYS MINED FROM OUR OWN MINES.
All Contracts Made as of St. Louis. Correspondence Solicited.



MACHINES
—FOR—
Drilling and Tapping Pipe Under Pressure
WITHOUT ANY ESCAPE OF GAS.
They are Strong and Compact.
Size of Combination Drills and Taps, ¾ to 4-inch.
Machines Sent to any Gas Company for Thirty Days' Trial.
Send for Circulars.
GEORGE LIGHT,
DAYTON, O.



GOODMAN STOPPER
The Half Minute
GAS MAIN SHUT-OFF
Manufactured and Sold by Safety Gas Main Stopper Co. 257-263 E. 133d St., New York.

AGENTS.
Pacific Coast—VAN E. BRITTON, 269 Monadnock Building, San Francisco, Cal.
Great Britain—PARKER & LESTER, Ormside Street, Old Kent Road, London, S. E.

JOHN DELL,
President and General Manager.
MISSOURI FIRE BRICK CO.,
ESTABLISHED 1882.
—MANUFACTURERS OF—
Gas Retorts, Bench Settings, Fire Brick, Cupola Linings, Etc.
We are the Exclusive Agents *for the* Mitchell Patent Benches, *Constructed with Half or Full Depth Furnaces, to Burn either Coal or Coke, and Arranged for Front or* Rear Clinkering. The Mitchell *is the* Original Coal Firing Bench. *We also Erect Plain Benches with* One to Six Retorts.
YOUR CORRESPONDENCE IS RESPECTFULLY SOLICITED.
City Office: *411 Olive Street, Continental Bank,* ST. LOUIS, MO.

GEROULD'S IMPROVED RETORT CEMENT.
A Cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.
Price List, f.o.b. NEW CASTLE, PA.
In Casks, 400 to 800 pounds, at 5 cents per pound.
In Kegs, 100 to 200 " " 6 " "
In Kegs less than 100 " " 7 " "
C. L. GEROULD,
29 North Mill St., New Castle, Pa.

GEORGE ORMROD, Pres. & Treas. JOHN D. ORMROD, Supt. J. G. EBERLEIN, Sec'y.
EMAUS PIPE FOUNDRY,
DONALDSON IRON COMPANY, - - - - EMAUS, PA.
CAST IRON GAS & WATER PIPE
MANUFACTURERS OF
Cast Iron Pipe and Special Castings
FOR WATER AND GAS, also FLANGE PIPE, LAMP POSTS, ETC.

Coal Gas Benches

SILICA OR FIRECLAY

EVENS & HOWARD FIRE BRICK CO.

ST. LOUIS, MO.

Silica Segmental Retorts, Supported by Silica Brick Setting Walls, will give you these four advantages over Clay Retorts:

They will carbonize more coal.
" " use less furnace fuel.
They will require less decarbonizing.
" " have a longer working life.

GAS BENCHES

WE guarantee a saving of 25 to 40 per cent. of bench fuel with the Doherty Economizer Bench. Furthermore, it is the only "non-clinkering" gas bench on the market.

Improved Equipment Co.

ENGINEERS DESIGNERS BUILDERS

Executive and Sales Office: 60 Wall Street, New York

Binder
FOR THE
Journal.
PRICE,
$1.

For Sale by
A. M. CALLENDER & CO.,
42 Pine Street,
New York City.

Catechism of Central Station Gas Engineering in the United States.

Compiled from the questions and answers sent out to the Practical Class, Trustees Gas Education Fund.

Section I. General Definitions. Section II. Manufacturing Materials. Section III. Manufacturing Plant---Construction and Operation. Section IV. Distribution System and Consumers' Appliances. Section V. Chemical. Section VI. Physical. Section VII. Masonry Construction. Section VIII. Miscellaneous.

6¼ INCHES BY 9 INCHES. 672 PAGES ILLUSTRATED.

PRICE:

Cloth, $5 net, plus postage. Flexible Leather, $7 net, plus postage.

For Sale by TRUSTEES GAS EDUCATIONAL FUND, 84 William Street, New York City.

Dont Be a Clam, Be a Man.

Mr. Clam is doing things just exactly as his ancestors have done.

Mr. Man, the real Mr. Man, is doing things always better than his ancestors have done.

Take elevators for example.

The real Mr. Man no longer goes a jiggling up and down stairs with a worm and wheel, ice-wagon gait and a balk and breakdown almost any old day.

And some awful words to say.

No, sir; the real man-ager no longer does that.

He lets old Daddy Steam take a hold of the things that go up and down stairs.

And without cost and without breakdowns so rapidly are things done that the plant is as good as on a level.

As that fellow out West said: "There are lots of Dead Ones in the Gas Business."

And did you ever meet a Dead Clam?

Mr. Clam never asks us for a circular.

But Mr. Man, the real Mr. Man-ager, always wants to know why we

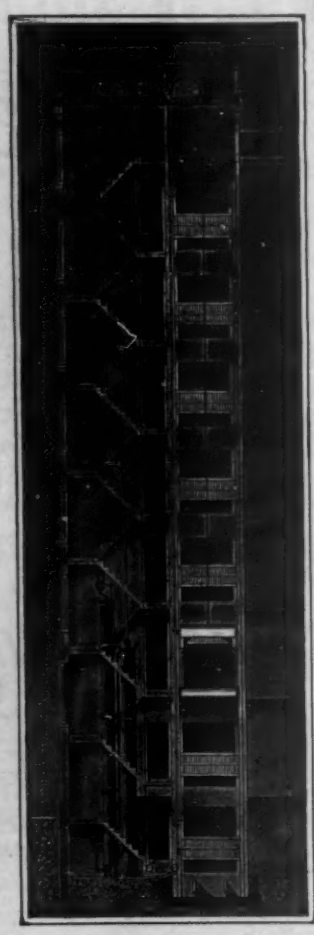
"HOOK 'ER TO THE BILER."

CRAIG RIDGWAY & SONS,

COATESVILLE, PA.,

ELEVATOR MAKERS TO FOLKS WHO KNOW.

THE GAS MAN'S PET.



BROWN PYROMETERS

Are recognized as the standard equipment for use on Water Gas Sets and Benches. Brown Pyrometers have been manufactured and constantly improved since 1860, and they have the largest sale to-day.

Do you want a copy of our 56-page catalogue?

The Brown Instrument Company,

Established 1860. PHILADELPHIA, PA.

BRANCH OFFICES:

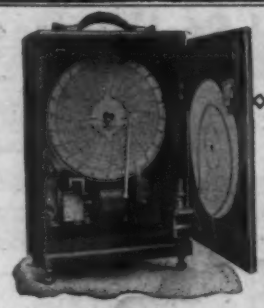
NEW YORK. PITTSBURG. CHICAGO.

Pipe Threading, Cutting & Nipple Machines,

THE 2-A MACHINE. Range, ⅛ to 2 Inches.

Nos. 0, 2-A, 3-F and 4-C. Arranged with a quick acting lever gripping chuck and two tool cutting head. Die heads to slide in ways on front of cutting head. Substantially built for hard and continuous service.

D. SAUNDERS' SONS, INC.
YONKERS, N. Y.



TRADE MARK

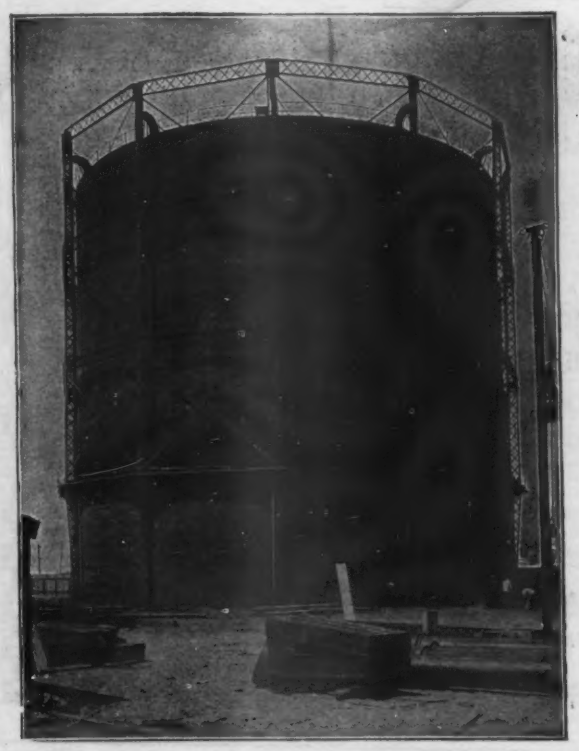
BRISTOL'S

REG. U. S. PAT. OFFICE.

The Bristol Trade Mark stands for the most extensive line of recording instruments in the world for pressure, temperature, electricity, speed and time. It stands for extreme simplicity of construction, the strongest guarantee of unfailing reliability under actual service and greatest durability. For these reasons thousands of Bristol Recorders are in daily active use. The Company behind the instrument is an absolute bond of security.

Write for handsome Condensed Catalog No. 160, which partially describes the Bristol line.

THE BRISTOL COMPANY - WATERBURY, CONN.



DEILY & FOWLER MFG. CO.,

39 Laurel Street, Philadelphia, Pa.

ESTABLISHED 1842. INCORPORATED 1908.

BUILDERS OF

GASHOLDERS,

Single-Lift or Telescopic,

With or Without Steel Tanks.

Oil Storage Tanks, Water Tanks, Etc.

ESTIMATES CHEERFULLY FURNISHED.

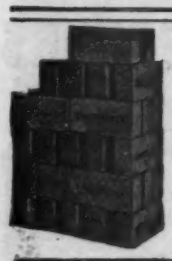
CORRESPONDENCE SOLICITED

DAVIS & FARNUM MANUFACTURING CO.,

Waltham, Mass.

GAS HOLDERS

Steel Tanks for Naptha Storage, Machinery for Coal and Water Gas Plants.



"CARBURETER"

ORDERS FOR 1911 TO DATE EXCEED THOSE OF THE LIKE PERIOD OF ANY OTHER YEAR SINCE THEY WERE PLACED ON THE MARKET. OUR SHIPMENTS GO INTO TWENTY-TWO STATES—WE HAVE YET TO RECEIVE OUR FIRST COMPLAINT.

ARE YOU USING THEM?

UNION MINING COMPANY,

PROPRIETORS OF THE MOUNT SAVAGE FIRE BRICK WORKS,

1118-1117 Fidelity Bldg., Baltimore, Md. Mount Savage, Md.

Telephone, 5933 Cortland.

FOUNDATION BORINGS.

705 Park Row Bldg., N. Y. City.

We Drill Anywhere. At Any Depth. For Every Purpose.

HEALEY CONTRACTING COMPANY,

DIAMOND CORE DRILLING CONTRACTORS.

Estimates, Plans, etc., of Every Type and Description, Especially with Reference to

GAS WORKS CONSTRUCTION, FOUNDATIONS, BUILDINGS, APPARATUS, ETC.

Sewers, Subways and Sub-Aqueous Tunnels, Bridges, Buildings, Railroads, Docks and Dams.

PLANT AND MEN FORWARDED AT ONCE. WORK PROMPTLY AND ACCURATELY COMPLETED.
SUBTERRANEAN INVESTIGATIONS AND REPORTS.

DIAMOND CORE DRILLING A SPECIALTY.

Constructors for Water Supply. Artesian and Driven Wells.

GOVERNORS

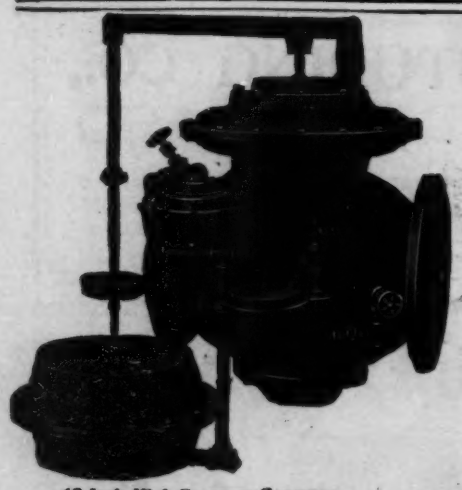
ANYTHING AND EVERYTHING USED FOR THE MANUFACTURE OF GAS. Current bulletins on the latest developments of Gas Works Apparatus and Equipment gladly sent for the asking.

G & Co.

IRON SPONGE

BETTER THAN EVER.

CONNELLY IRON SPONGE AND GOVERNOR COMPANY,
NEW YORK. CHICAGO. BOSTON. SAN FRANCISCO.



12-Inch High Pressure Governor

REYNOLDS' GAS REGULATOR COMPANY,

ANDERSON, IND., U. S. A.

We make all sizes for all classes of reduction,

Double and Single District Stations,

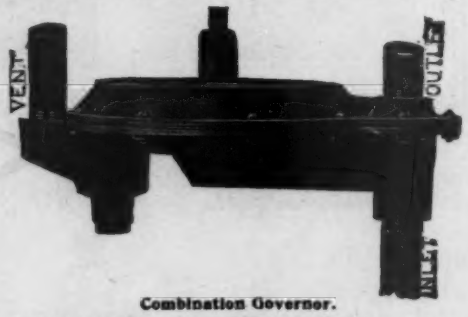
And Individual Service Governors for Reducing High Pressure.

HOLDER GOVERNORS

And Low Pressure Regulators, all of the Dry Diaphragm type.

English Agents:
THE BRYAN DONKIN CO., LTD., Chesterfield, England.

Write for Catalog.



Combination Governor.
(Governor and Mercury Seal.)

THE FULTON GAS PRESSURE GOVERNORS

For Artificial or Natural Gas.
For District or Individual Service.

Our Improved **Duplex Sensitive Governor** for district service will reduce high pressure gas to inches of water without variation. Absolutely safe and reliable. No complicated mechanism to get out of order. No auxiliary regulators to assist the main governor required. The most simple and perfect governor ever placed on the market. We also manufacture Reducing Governors for any inlet or outlet pressure.

See our high pressure Service Governor with safety valve.

More than 20 years' experience with the largest gas companies. Send for catalog.

THE CHAPLIN-FULTON MFG. CO., PITTSBURGH, PA.

VAN E. BRITTON, Pacific Coast Agent, Monadnock Bldg., San Francisco, Cal.

FIELD'S ANALYSIS FOR THE YEAR 1911.

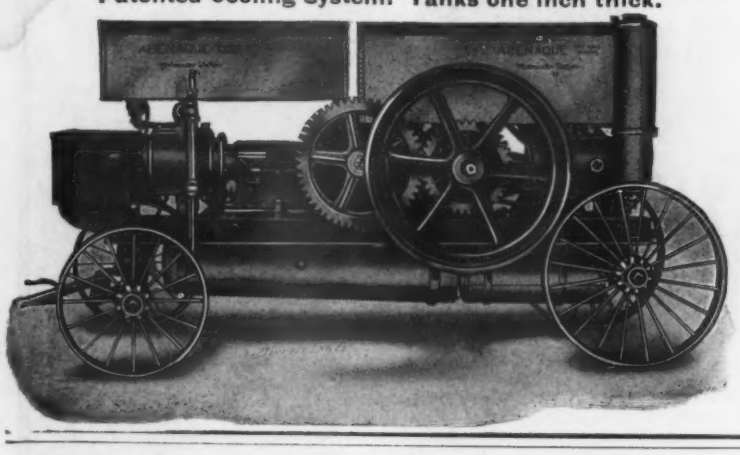
An Analysis of the Principal Gas Undertakings in England, Scotland and Ireland. Being the 43d Year of Publication.

PRICE, $5.

For Sale by AMERICAN GAS LIGHT JOURNAL, 42 Pine Street, New York City.

FOR CAULKING, RIVETING AND TRENCH WORK,

Patented Cooling System. Tanks one inch thick.



Get the equipment which can be moved rapidly and easily, which enables you to take advantage of the economy in using compressed air.

THE

Abenaque Portable Compressor Outfit

Is the original and only time-proved gasoline engine driven outfit on the market. It's the device that cuts out many laborers and eliminates much expense. Unless you have our Catalogue A-3 you are not up to date on the best compressor practice. Write

ABENAQUE MACHINE WORKS,

79 MILK STREET, BOSTON. WESTMINSTER STATION, VERMONT.

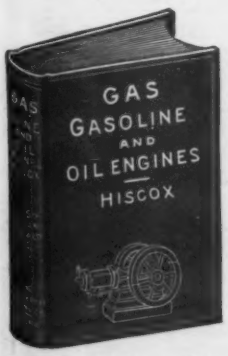
The only positive insurance against leaks in gas mains is

LEAD WOOL.

Composed of fine, long fibers of **lead,** it allows of calking the **whole depth** of the **joint** from the yarn up. No melting pots required; it is applied **dry.** Best possible references. **Drop us a line** for samples and circulars.

NEW YORK LEAD WOOL COMPANY,

93 NASSAU STREET. NEW YORK CITY.



JUST PUBLISHED, 15TH EDITION, REVISED, ENLARGED AND RESET.

Gas, Gasoline and Oil Engines,

INCLUDING GAS PRODUCER PLANTS,

By GARDNER D. HISCOX, M.E.

Author of "MECHANICAL MOVEMENTS," "COMPRESSED AIR," Etc.

PRICE, - - - - - $2.50.

The only complete American book on the subject for Gas Engine Owners, Gas Engineers and intending purchasers of gas engines, treating fully on the construction, installation, operation and maintenance of gas, gasoline, kerosene and crude petroleum engines.

The new rewritten, enlarged and revised 15th edition of this work has been prepared to meet the increasing demand for a thorough treatise on the subject. Its 450 pages give general information for everyone interested in this popular motive power and its adaptation to the increasing demand for a cheap and easily managed motor requiring no licensed engineer. It is fully illustrated by 351 Engravings and Diagrams. For sale by

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.

The "Gas World" Year Book, 1911,

Edited by JOHN DOUGLAS.

Technical Data, Diary and Handy Tables for Gas Engineers and Managers, Directory of English Gas Companies, etc.

Price, $3. For Sale by

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.

THE BARTLETT HAYWARD COMPANY

DESIGNERS AND BUILDERS OF

COMPLETE GAS PLANTS

STRUCTURAL WORK. BUILDINGS AND APPARATUS

GAS HOLDERS

BALTIMORE. NEW YORK.

FINANCIAL NOTICES.

DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO., N. W. CORNER BROAD AND ARCH STS., PHILADELPHIA, Dec. 11, 1912.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable Jan. 15, 1913, to stockholders of record at the close of business, Dec. 31, 1912. Checks will be mailed.

1958-5 LEWIS LILLIE, Treasurer.

POSITIONS WANTED.

As SUPERINTENDENT. I am 44 years of age, a thorough mechanic, have had 22 years' practical experience in manufacture and distribution of coal and water gas Would like position as Superintendent in plant that is run down and not getting results.

Address, "CALORIMETER,"

1960-2 Care this Journal.

As SUPERINTENDENT of a water gas plant in a town of 10,000. Is now holding a like position. Understands high and low pressure; also bookkeeping and new business.

Address, "ADVANCE,"

1961-1 Care this Journal.

As MANAGER or SUPERINTENDENT of a gas company, by a man who has 18 years' experience in the business. Is employed in such a position at present in city of 12,000, but prefers a larger field. For further particulars, Address, "AMBITIOUS,"

1961-2 Care this Journal.

POSITIONS OPEN.

Wanted, a GASFITTER of experience. Must be a reliable man and have good references. A good position for the right man.

Address, "VERMONT,"

1955-tf Care this Journal.

MISCELLANEOUS.

Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 180 in use. Write to

STROH & OSIUS, Patentees, or

MICHIGAN AMMONIA WORKS, • Detroit, Mich.

The Light, Heat & Power Corporat'n

CONTRACTING ENGINEER

Electric Light and High Pressure Gas Plants.

Equipment, Material and Supplies.

131 State Street, Boston, Mass.

Cable Address, "LIHEPOWCO." Code, LIEBERS'.

KELLER ADJUSTABLE COKE CRUSHER

Strong, Simple, Durable. Will Crush any Size Desired.

C. M. KELLER,

Columbus, Ind.

Correspondence Solicited.

ESTABLISHED 1856.

HENRY MAURER & SON,

Manufacturers of

High Grade Firebrick, Blocks, Tiles,

ETC.,

Works: Maurer, N. J. Office: 420 E. 23d St., N. Y. City

BINDER for the JOURNAL.

Price, $1.00.

A. M. GALLENDER & CO., 42 Pine Street, N. Y

FIELD'S ANALYSIS FOR THE YEAR 1911.

An Analysis of the Principal Gas Undertakings in England, Scotland and Ireland; being the 43d year of publication. Compiled and arranged by JOHN W FIELD, Sec'y and Gen. Mgr. of The Gas Light and Coke Company, London.

Price, $5. For Sale by

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., N. Y. City.

BOOKS

—FOR—

GAS MEN.

CALORIFIC POWER OF GAS, by J. H. Coste. 300 pages. 57 Illustrations. Price, $2.

CARBONIZATION OF COAL (1912), by Vivian B. Lewes. 325 pages. 27 illustrations. Price, $3.

CONSTRUCTION AND MANAGEMENT OF SMALL GAS WORKS, by N.H. Humphrys. (English practice.) 250 pages. Price, $3.

DIRECTORY BRITISH GAS ENGINEERS 1912, by C. W. Hastings. Price, $1.25.

DIRECTORY OF GAS COMPANIES, by E. C. Brown. Price, $5.

DISTRIBUTION by STEEL, by Henry Woodall and B. R. Parkinson. Price, $2.50.

DISTRIBUTION OF GAS, by Walter Hole. 3d ed. 837 pp. Illustrated. Price, $7.50.

ENGINE THEORY AND DESIGN, GAS, by A. C. Mehrtens. 256 pages. 241 illustrations. Price, $2.50.

FUELS, LIQUID AND GASEOUS, by Vivian B. Lewes. 334 pages. Price, $2.

GAS AND GAS WORKS, by Hughes and O'Connor. Price, $2.50.

GAS ENGINE, THE, by Forrest R. Jones. 447 pages and 142 cuts. Price, $4.

GAS MANUFACTURE, by W. J. A. Butterfield. Price, $2.50.

HANDBOOK OF AMERICAN GAS ENGINEERING PRACTICE, by M. Nisbet Latta. Price, $4.50.

HEATING, by W. J. Baldwin. Price, $2.50.

ILLUMINATION, ART OF, by Dr. Louis Bell. Price, $2.50.

LIGHTING, PUBLIC, by GAS and ELECTRICITY, by W. J. Dibdin. 528 pages. About 150 illustrations. Price, $8.

LIGHT, PHOTOMETRY AND ILLUMINATION (1912), by W. E. Barrows, Jr. 335 pages. 200 illustrations. Price, $3.

MOTION STUDY, by Frank B. Gilbreth. 135 pages. Illustrated. Price, $2.

OPTICS, OUTLINES OF APPLIED, by P. S. Nutting. 234 pages. 73 illustrations. Price, $2.

PUBLIC UTILITY PROPERTIES, VALUATION of, by Henry Floy, M.E. Price, $5

RADIATION, LIGHT & ILLUMINATION, by Dr. C. P. Steinmetz. 200 pages. 127 illustrations. Price, $3.

RETORT SETTINGS (1912 ed.), by T. Brooke. 200 pages. 162 illustrations. Price, $3.

TESTING OF GAS AND GAS METERS, by C. H. Stone. Price, $3.50.

For Sale by

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.

EQUITABLE METER COMPANY,

434-444 First Avenue, Pittsburgh, Pa. Write for Catalogue "D."

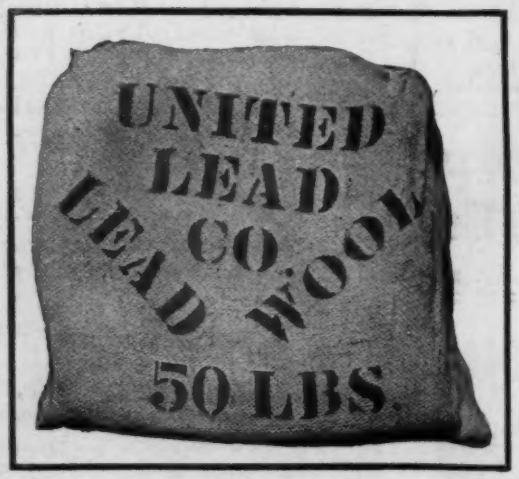
METERS, REGULATORS, GOVERNORS, BURNERS, ETC.

Van E. Britton, San Francisco, Cal.—Agent for California, Nevada and New Mexico.

(For Natural and Artificial Gas).

Northwest Gas Equipment Co., Portland, Ore.—Agents for Oregon, Washington, Idaho, Montana & British Columbia.

LLOYD'S Intensive Scrubber will take out all the ammonia.



Always keep an unopened, 50-lb., waterproof package of ULCO LEAD WOOL in stock. :: ::

LEAKS!

There is no material so handy or so satisfactory to repair breaks in mains or leaky joints with as

ULCO
Lead Wool.

Order your supply now.

United Lead Co.

111 Broadway New York City.

NO. 150 LAMP.

"THE MINER"
GLOBE STREET LAMPS

for

All Kinds of Gas or Burners.

Lamp Posts, Cocks and Burners, Everything Necessary for

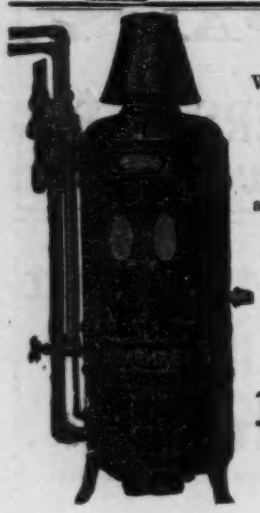
STREET LIGHTING.

This cut shows our **No. 150 LAMP**, which is but one of a large variety of designs.

If you are interested in street, or park lighting, we want to send you our catalogue and prices.

THOS. T. W. MINER,

819-823 Eagle Ave., - NEW YORK, N. Y.



HOT WATER ALWAYS READY

Without Bother or Wait—Cheaply Heated where

HUMPHREY AUTOMATIC GEYSERS

are in use. Heat water instantly at a turn of a faucet.

SIMPLE. DEPENDABLE.
DURABLE. GUARANTEED.

Send for Catalogue, to

HUMPHREY COMPANY,

Kalamazoo, Mich., U. S. A.

Branches in All Large Cities.

Knowledge is Power

¶Order the **American Gas Light Journal** sent you personally, either to office or home. Read it, so you may keep up with the times. The knowledge gained will help make your influence felt as a power in the industry. :: :: :: ::

Order your copy now!

S. R. DRESSER MANUFACTURING CO.,

BRADFORD, PENNA., U. S. A.

High-Grade Pipe Couplings, Sleeves, Clamps and Fittings.

Sizes 2" I. D. to 4" I. D. inclusive.

The Dresser All-Steel Couplings Style 38.

FOLLOWERS PRESSED FROM SOLID PLATE.

Sizes 5½" I. D. to 10" O. D. inclusive.

Sizes 10" I. D. to 20" O. D. inclusive.

Dresser Stands for Quality, Workmanship and Finish.

SEND FOR CATALOGUE AND STATE REQUIREMENTS.

ALPHABETICAL LIST OF ADVERTISERS.

New Advertising, or Changes in Standing Ads., to insure attention the issue following their reception, Must be in Hand on Wednesday.

Abenaque Machine Works..... 19
American Gas Furnace Co..... 32
American Graetzin Light Co..... 26
American Meter Co..... 39
Atlas Paint Co..... 8

Baehr, Wm. A..... 26
Bartlett-Hayward Co..... 30
Berwind-White Coal Mining Co..... 12
Bristol Co..... 16
Bronder, G. A..... 12
Brown Hoisting Machinery Co..... 8
Brown Instrument Co..... 16
Burnham, R. E..... 26
Byllesby & Co., H. M..... 27
Builders Iron Foundry..... 36

Central Foundry Co..... 9
Chaplin-Fulton Mfg. Co..... 18
Connelly Iron Sponge and Governor Co. 18
Connersville Blower Co..... 25
Consol. Gas Purification and Chem. Co. 5
Crane, Wm. M..... 34
Cruse Engineering Co..... 26
Cruse-Kemper Co..... 5

Davis & Farnum Mfg. Co..... 17
Deily & Fowler Mfg. Co..... 17
Dickey & Co., C. H..... 38
Didier-March Co..... 7
Dixon Crucible Co., Jos..... 34

Donaldson Iron Co..... 14
Dresser Mfg. Co., S. R..... 26

Electrical Testing Laboratories..... 26
Equitable Meter Co..... 27
Evens & Howard Firebrick Co.. 15

Forstall & Robinson..... 27

Gardner, Jr., Co., James..... 4
Gas Engineering Co..... 6
Gas Machinery Co..... 4
Gas Tip and Self-Lighter Co..... 34
Gautier & Co., J. H..... 14
General Gas Appliance Co..... 31
Gerould, C. L..... 14
Griffin & Co., John J..... 49

Healey Contracting Co..... 17
Helme & McIlhenny..... 49
Hone Co., F. de P..... 26
Humphrey Co..... 22
Humphreys & Miller..... 26
Hunt Co., C. W..... –

Improved Equipment Co..... 15
Iron Hydroxide Co..... 27
Isbell-Porter Co..... 10

Johnson Gas Appliance Co..... –

Keller, C. M..... 21
Kerr Murray Mfg Co.. 12
Keystone Meter Co..... 18
Koppers Co., H..... 2

Laclede Christy Clay Products Co ..... –
Lea, Henry I..... 27
Light, Geo..... 14
Light, Heat and Power Corporation.... 21
Link Belt Co 6
Lloyd Construction Co..... 34
Ludlow Valve Mfg. Co..... 10

Manhattan Sales Co..... 33
Maurer & Son, H..... 21
McDonald & Co., D..... 37
Metric Metal Works..... 36
Michigan Ammonia Works..... 31
Miner, Thos. T. W..... 22
Missouri Firebrick Co..... 14
Mueller Mfg. Co., H..... 13

National Chamber Oven Co..... –
New York Improved Meter Co..... 36
New York Lead Wool Co..... 19

Owens, H. Thurston..... 37

Parker-Russell Mining & Mfg. Co.. 14
Pennsylvania Globe Gas Light Co... ... 29
Pittsburgh Meter Co..... 35
Pittsburg Water Heater Co..... 34
Pratt, E. G..... 27
Quintard Iron Works..... 28
Ramsdell, Geo. G..... 36

Randolph, W. W..... 18
Reynolds Gas Regulator Co..... 16
Ridgway & Sons, Craig 13
Reliance Gas Regulator and Machine Co. 12
Riter-Conley Mfg. Co..... 1
Roots Co., P. H. & F. M..... 33
Rotary Meter Co..... 37

Safety Gas Main Stopper Co..... 22
Saunders Sons, Inc., D..... 16
Shapiro & Aronson..... –
Sprague Meter Co..... 37
Stacey Mfg. Co..... 6
Standard Meter and Manufacturing Co 39
Sullivan Bros..... 14
Sun Vapor and Gas Street Light Co.... 28

Terry Steam Turbine Co..... 8
Tufts Meter Co., N..... 39

Union Mining Co., Baltimore, Md..... 17
United Gas Improvement Co..... 11
United Gas Light and Mfg. Co..... 37
United Lead Co..... 22

Welsbach Co..... 30
Welsbach Street Lighting Co..... 30
Western Gas Construction Co..... –
Westmoreland Coal Co..... 13
White, J. G. & Co..... 27
Wood & Co., R. D..... 35

CLASSIFIED LIST OF ADVERTISMENTS.

Ammonia Concentrators.
Bartlett-Haywood Co.
Gas Machinery Co.
Michigan Ammonia Works.
Western Gas Construction Co.

Apparatus.
See Coal Gas Plants,
Conveyors,
Stoking Machinery,
Water Gas Plants.

Arc Lamps.
See Lamps.

Bags—Gas.
American Meter Co.
New York Rubber Co.
See also Stoppers.

Benches—Complete.
Didier-March Co.
Evens & Howard Firebrick Co.
Gardner, Jr., Co., James.
Gas Machinery Co.
Gautier & Co., J. H.
Improved Equipment Co.
Isbell-Porter Co.
Laclede-Christy Clay Products Co
Missouri Firebrick Co.
National Chamber Oven Co.
Parker-Russell Mining and Mfg. Co.

Benzol.
Iron Hydroxide Co.

Blast Furnaces.
American Gas Furnace Co.

Blowers. See Exhausters.

Books.
American Gas Light Journal.

Burners, Fuel.
American Gas Furnace Co.
Crane Co., Wm. M.

Burners. See Lamps.

Borings.
Healey Contracting Company.

By-Product Plants.
Coppers Co., H.
National Chamber Oven Co.

Calking Tools.
Abenaque Machine Works.
New York Lead Wool Co.
United Lead Co.

Calorimeters.
American Meter Co.
Improved Equipment Co.

Carbonic Acid Extractors.
See Purifiers, Scrubbers.

Castings.
See Iron Work. Pipe.

Cements.
Gerould, C. L.

Couplings.
Central Foundry Co.
Dresser Mfg. Co., S. R.

Charging Machinery.
Bronder, G. A.
Davis & Farnum Mfg. Co.
Isbell-Porter Co.
Kerr Murray Mfg. Co.
Stacey Mfg. Co.

Coals.
Berwind-White Coal Mining Co.
Westmoreland Coal Co.

Coal Gas Apparatus.
Bartlett-Hayward Co.
Cruse Engineering Co.
Gas Engineering Co.
Gas Machinery Co.
Improved Equipment Co.
Riter-Conley Mfg. Co.
Stacey Mfg. Co.
United Gas Improvement Co.
Western Gas Construction Co.

Coal Handling Machinery.
Bronder, G. A.
Brown Hoisting Machinery Co.
Hunt Co., C. W.
Link Belt Co.

Cocks—Lamp.
American Meter Co
Crane Co., Wm. M.
Shapiro & Aronson.

Cocks—Meter and Service.
American Meter Co.
Mueller Mfg. Co., H.

Cookers. See Ranges.

Coke Crushers.
Bartlett-Hayward Co.
Keller, C. M.

Compressors (Portable.)
Abenaque Machine Works.

Condensers. See Purifiers.

Conveyors.
Bartlett-Hayward Co.
Bronder, G. A.
Brown Hoisting Machine Co.
Davis & Farnum Mfg. Co.
Gas Engineering Co.
Gas Machinery Co.
Hunt Co., C. W.
Kerr Murray Mfg. Co.
Link Belt Co.
Stacey Mfg. Co.
Western Gas Construction Co.

Drilling.
Healey Contracting Company.

Elevators.
Craig Ridgway & Sons.

Engineers—Consulting.
Baehr, W. A.
Byllesby & Co., H. M.
Electrical Testing Laboratories.
Forstal & Robison.
Hone Co., F. de P.
Humphreys & Miller.
Improved Equipment Co.
Lea, Henry I.
Owens, H. Thurston.
Pratt, E. G.
Ramsdell, Geo. G.
Randolph, Wm. W.
White, J. G., & Co.

Engineers—Contracting.
Bartlett-Hayward Co.
Bronder, G. A.
Cruse-Kemper Co.
Cruse Engineering Co.
Davis & Farnum Mfg. Co
Didier-March Co.
Forstal & Robison.
Gas Engineering Co.
Gas Machinery Co.
Improved Equipment Co.
Isbell-Porter Co.
Kerr Murray Mfg Co.
Light, Heat and Power Corporation.
National Chamber Oven Co.
Riter-Conley Mfg. Co.
Stacey Mfg. Co.
Sullivan Bros.
United Gas Improvement Co.
Western Gas Construction Co.

Education.
Owens, H. Thurston.

Enrichers.
See Oil.

Exhausters.
American Gas Furnace Co.
Connersville Blower Co.
Cruse Engineering Co.
Davis & Farnum Mfg. Co.
Gas Engineering Co.
Gas Machinery Co.
Isbell-Porter Co.
Kerr Murray Mfg. Co
Roots Co., P. H. & F. M
Terry Steam Turbine Co.

Firebrick.
Didier-March Co.
Evens & Howard Firebrick Co.
Gardner, Jr. Co., James.
Gas Machinery Co.
Gautier & Co., J. H.
Improved Equipment Co.
Laclede-Christy Clay Products Co.
Maurer & Son, H.
Missouri Firebrick Co.
Parker-Russell Mining and Mfg. Co.
Union Mining Co.

Fittings. See Pipe.

Fixtures.
Shapiro & Aronson.
Welsbach Co.

Furnaces—Gas. See Industrial Fuel.

Gauges.
American Meter Co.
Bristol Co.
Brown Instrument Co.
Connelly Iron Sponge and Governor Co.
Helme & McIlhenny.
McDonald & Co., D.

Governors.
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge and Governor Co.
Equitable Meter Co.
Gas Machinery Co.
Helme & McIlhenny.
Isbell-Porter Co
Lloyd Construction Co.
Mueller Mfg. Co., H.
Pittsburgh Meter Co.
Reliance Gas Regulator and Machine Co
Reynolds Gas Regulator Co.
Sprague Meter Co.

Heaters. See Ranges. Water Heaters.

Heating Machines.
American Gas Furnace Co.

High Pressure Goods.
American Gas Furnace Co.
Mueller Mfg. Co., H.
Pennsylvania Globe Gas Light Company.
See Governors.

Holders.
Bartlett-Hayward Co.
Cruse Engineering Co.
Cruse-Kemper Co.
Davis & Farnum Mfg. Co.
Deily & Fowler Mfg. Co.
Gas Engineering Co.
Kerr Murray Mfg. Co.
Riter-Conley Mfg. Co.
Stacey Mfg. Co.
Western Gas Construction Co.
Wood & Co., R. D.

Hydrogen Gas Apparatus.
Gas Engineering Co.

Hydraulic Main Cleaner.
Evens & Howard Firebrick Co.

Industrial Fuel Appliances.
American Gas Furnace Co.
Johnson Gas Appliance Co.

Iron Work.
Cruse Engineering Co.
Cruse-Kemper Co.
Gas Machinery Co.
Gas Engineering Co.
Quintard Iron Works.
Riter-Conley Mfg. Co.
Stacey Mfg. Co.
Sun Light Co.
Wood & Co., R. D.

Instruments.
American Meter Co.
Bristol Co.
Brown Instrument Co.
Connelly Iron Sponge and Governor Co.

Lamps.
Crane Co., Wm. M.
Gas Tip Selt-Lighting Co.
General Gas Light Co.
Gleason Mfg. Co., R. P.
Miner, Thos. T. W.
Pennsylvania Globe Gas Light Company.
Shapiro & Aronson
United Gas Light and Mfg. Co.
Welsbach Co.
Welsbach Street Lighting Co.

Lamp Posts.
Donaldson Iron Co.
General Gas Light Co.
Miner, Thos. T. W.
Pennsylvania Globe Gas Light Company.
Sun Vaporand Gas Street Light Co.
United Gas Light and Mfg. Co.
Welsbach Street Lighting Co.
Wood & Co., R. D.

Lantern—Safety.
Connelly Iron Sponge and Governor Co

Lead.
New York Lead Wool Co.
United Lead Co.

Machinery.
See Charging Machinery.
Coal Gas Apparatus.
Conveyors.
Water Gas Apparatus

Mains. Sullivan Bros.
See Compressors. Pipe. Lead.

Mantles.
General Gas Light Co.
Welsbach Co.

Meters—Acetylene.
Keystone Meter Co.
Pittsburgh Meter Co.

Meters—Air.
Metric Metal Works.
Pittsburgh Meter Co.
United Gas Improvement Co.

Meter Connections.
Mueller Mfg. Co., H.

Meter Locks. See Prepayment Meters.

Meters—Natural Gas.
Builders' Iron Foundry.
Equitable Meter Co.
Keystone Meter Co.
Metric Metal Works.
Pittsburg Meter Co.
Standard Meter Co.
Sprague Meter Co.

Meters—Prepayment.
American Meter Co.
Dickey & Co., C. H.
Griffin & Co., John J.
Helme & McIlhenny.
Keystone Meter Co.
McDonald & Co., D.
New York Improved Meter Co.
Pittsburgh Meter Co.
Sprague Meter Co.
Tufts Meter Co., N.

Meters—Proportional.
Metric Metal Works.
Pittsburg Meter Co.
Rotary Meter Co.

Meter Provers. See Provers.

Meters—Regular.
American Meter Co.
Builders' Iron Foundry.
Dickey & Co., C. H.
Griffin & Co., John J.
Helme & McIlhenny.
Keystone Meter Co.

Metric Metal Works.
McDonald & Co.
New York Improved Meter Co
Pittsburg Meter Co.
Standard Meter Co.
Sprague Meter Co.
Tufts Meter Co., N.

Meters—Station.
American Meter Co.
Dickey & Co., C. H.
Equitable Meter Co.
Griffin & Co., John J.
Helme & McIlhenny.
McDonald & Co., D.
Rotary Meter Co.
Standard Meter Co.
Tufts Meter Co., N

Meters—Steam.
Gas Machinery Co.
United Gas Improvement Co.
Western Gas Construction Co.

Meters—Test.
American Meter Co.
Dickey & Co., C. H.
Pittsburg Meter Co.
Standard Meter Co.

Meters—Wet.
American Meter Co.
Helme & McIlhenny.
Pittsburgh Meter Co.
Tufts Meter Co., N.

Oil Tanks.
See Holders.

Outdoor Lighting Fixtures.
See Street Lamps.
Lamp Posts.

Patents. Burnham, R. E.

Paints.
Atlas Paint Co.
Dixon Crucible Co., Jos.

Photometers.
American Meter Co.
Connelly Iron, Sponge and Governor Co.

Plants—Complete.
See Engineers—Contracting.

Pipe.
Davis & Farnum Mfg. Co.
Dresser Mfg. Co., S. R.
Donaldson Iron Co.
Kerr Murray Mfg. Co.
Quintard Iron Works.
Sullivan Bros.
Wood & Co., R. D.

Pipe Cutting & Threading Mach.
Mueller Mfg. Co.
Saunders Sons, Inc., D.

Pipe Laying.
Abenaque Machine Works.
New York Lead Wool Co.
Sullivan Bros.
United Lead Co.

Prepayment Metrs.
See Meters.

Processes.
See Coal Gas Apparatus.
Water Gas Apparatus.
Hydrogen Gas Apparatus.

Producer Gas Plants.
Gas Engineering Co.
Gas Machinery Co.
Wood & Co., R. D.

Provers—Meter.
American Meter Co.
Dickey & Co., C. H.
Helme & McIlhenny.
Metric Metal Works.
McDonald & Co., D.
Pittsburgh Meter Co
Standard Meter Co.

Publicity.
Owens, H. Thurston.

Pumps—Drip.
American Meter Co.

Purifiers.
Bartlett-Hayward Co.
Connelly Iron Sponge and Governor Co.
Cruse Engineering Co.
Cruse-Kemper Co.
Davis & Farnum Mfg. Co.
Gas Engineering Co.
Gas Machinery Co.
Isbell-Porter Co.
Kerr Murray Mfg. Co.
Lloyd Construction Co
Quintard Iron Works.
Stacey Mfg. Co.
United Gas Improvement Co.
Western Gas Construction Co.
Wood & Co. R. D.

Purifying Materials.
Connelly Iron Sponge and Governor Co.
Consol. Gas Purification and Chemical Co.
Gas Machinery Co.
Iron Hydroxide Co.
United Gas Improvement Co.

Purifier Trays.
Iron Hydroxide Co.

Pyrometers.
Bristol Co.
Brown Instrument Co.

Regulators.
See Governors.

Retorts—Horizontal & Inclined.
Didier-March Co.
Evens & Howard Firebrick Co.
Gardner, Jr., Co., James.
Gas Machinery Co.
Gautier & Co., J. H.
Improved Equipment Co.
Laclede-Christy Clay Products Co.
Maurer & Son, H.
Missouri Fire Brick Co.
Parker-Russell Mining and Mfg. Co.

Retorts—Silica.
Improved Equipment Co.

Retorts—Vertical.
Didier-March Co.
Gas Machinery Co.
Improved Equipment Co.
Laclede-Christy Clay Products Co.
Parker-Russell Mining and Mfg. Co.

Rubber Goods.
See also Bags.

Services.
Sullivan Bros.
See also Pipe.

Service Boxes.
Mueller Mfg. Co., H.

Service Cocks.
American Meter Co.
Mueller Mfg. Co., H.
See also Cocks.

Scrubbers.
See Purifiers.

Scrubber Trays.
See Purifier Trays.

Specials. See Pipe.

Steel Construction.
See Iron Work.

Stoking Machinery.
See Charging Machinery.

Stocks and Dies.
Mueller Mfg. Co., H.

Stopppers—Gas Main.
Safety Gas Main Stopper Co.

Storage Tanks.
See Holders.

Street Lamps.
Miner, Thos. T. W.
Welsbach Street Lighting Co.

Structural Iron Work.
See Iron Work.

Tapping Machines.
Light, Geo.
Mueller Mfg. Co., H.

Tar Extractors.
See Coal Gas Apparatus.
Water Gas Apparatus.

Testing.
Electrical Testing Laboratories.

Testing Apparatus.
See Instruments.

Thermometers.
American Meter Co.
Bristol Co.
Brown Instrument Co.
Gas Machinery Co.

Time Recording Mechanism.
Bristol Co.

Thermostats.
Bristol Co.

Tips. Gas Tip Self-Lighter Co.

Tools.
Dresser Mfg. Co., S. R.
Light, Geo.
Mueller Mfg. Co., H.
Safety Gas Main Stopper Co.
Saunders Sons, Inc., D.

Tubing.
See Rubber Goods.

Turbines.
Terry Steam Turbine Co.

Valves.
Bartlett-Hayward Co.
Davis & Farnum Mfg. Co.
Equitable Meter Co.
Gas Machinery Co.
Hunt Co., C. W.
Isbell-Porter Co.
Kerr Murray Mfg. Co.
Lloyd Construction Co.
Ludlow Valve Mfg. Co.
Roots Co., P. H. and F. M.
Stacey Mfg. Co.
Western Gas Construction Co.
Wood & Co., R. D.

Vertical Retorts.
See Retorts.

Washers.
See Purifiers.

Water.
See Heaters.
Meters.
Pipe.

Water Gas Apparatus.
Bartlett-Hayward Co.
Gas Engineering Co.
Gas Machinery Co.
Stacey Mfg. Co.
United Gas Improvement Co.
Western Gas Construction Co.

Water Heaters.
Humphrey Co.
Manhattan Sales Co.
Pittsburg Water Heater Co.

Water Tanks. See Holders.

YOU CAN'T BUY MORE BLOWER VALUE

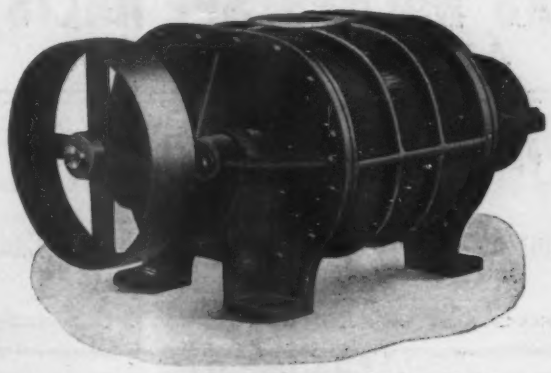
than you get in the Connersville VICTOR Blower.

THE CONNERSVILLE VICTOR BLOWER IS OF THE SAME HIGH GRADE construction as its Big Brother—The Connersville Blower.

Note the following points:

Ring Oiling Bearings – liberal in size—standard in both machines.
Liberal Ribbing of Case, Head-plates and Impellers—ensuring strength.
Gears cut from the solid—run in oil in a dust tight case.
Made in *eight* sizes—with T. & L. pulleys and outer-bearing if wanted.
Made for either standard or high pressure, depending on service requirements.

These blowers are standard in their field for the same reason the larger machines have been standard for 20 years—*it's in their careful construction.*



RING OILING BEARINGS.

THE CONNERSVILLE BLOWER COMPANY,

CONNERSVILLE, IND.

114 Liberty St., New York. 929 Monadnock Bldg., Chicago.

ALEX. C. HUMPHREYS, President.
ALTEN S. MILLER, Vice-President.

EMILE GUILLAUDEU, Treasurer.
ROBERT O. LUQUEER, Secretary.

HUMPHREYS & MILLER, INC.,

165 Broadway, New York,

CONSULTING ENGINEERS.

ARTIFICIAL GAS,
NATURAL GAS,
ELECTRICITY,

OPERATORS,
CONSTRUCTORS,
APPRAISERS.

WILLIAM A. BAEHR,
CONSULTING ENGINEER,
GAS AND ELECTRIC PLANTS.
Design, Construction and Operation, Valuations and Reports.
PEOPLES GAS BUILDING, CHICAGO.

CABLE ADDRESS:
WILDOLPH, NEW YORK.

WILLIAM W. RANDOLPH, M.E.,
CONSULTING ENGINEER,
FORMERLY CHIEF ENGINEER AND VICE-PRESIDENT OF
HUMPHREYS & GLASGOW, INC.
EXAMINATION AND VALUATION OF PUBLIC UTILITY AND POWER CORPORATIONS.
ADVICE AS TO CONSTRUCTION AND MANAGEMENT.

165 BROADWAY,
NEW YORK CITY.

CRUSE ENGINEERING COMPANY,

TRENTON, N. J.

GAS HOLDER SPECIALIST,
ARTHUR R. CRUSE.

FOR FULL INFORMATION, SEND FOR PAMPHLET. ASK ABOUT MY PATENT SAFETY VALVE FOR RELIEF HOLDERS, a Good device.

PATENTS—TRADE MARKS—COPYRIGHTS.
ROYAL E. BURNHAM,
Solicitor of Patents and Counsellor in Patent Causes.
883 Bond Building, Washington, D. C.
Send for Pamphlet on Patents.

QUINTARD IRON WORKS CO.,
Foot of Twelfth Street and East River, New York City.
BENCH WORK, CONDENSERS, SHAVING SCRUBBERS,
CAST IRON FLANGED PIPE, RIVETED
STEEL PIPE.
FREDERICK W. FLOYD, Engineer.

FREDERIC DE P. HONE & CO.,
ENGINEERS,
1 Liberty St., New York City.
INSPECTION OF MATERIALS AND WORKMANSHIP
AT THE MILLS, SHOPS, FOUNDRIES, AND ERECTION
OF HOLDERS AND OTHER STRUCTURES AND APPARATUS.
Reports and Consultations.

GEORGE G. RAMSDELL,
CONSULTING ENGINEER,
254 WEST 89TH STREET
NEW YORK CITY.

TESTS OF COAL, ASH, C.P. and B.T.U.'s.
LAMPS, MANTLES, ETC.

ELECTRICAL TESTING LABORATORIES
80th St. and East End Ave.
WRITE US FOR TERMS.

H. M. BYLLESBY & CO.
(INCORPORATED).

CHICAGO,
Insurance Exchange Bldg.

NEW YORK,
Trinity Building.

PURCHASE, FINANCE, CONSTRUCT AND OPERATE ELECTRIC LIGHT GAS, STREET RAILWAY AND WATER POWER PROPERTIES.

EXAMINATIONS AND REPORTS.

UTILITY SECURITIES BOUGHT AND SOLD.

EDWARD G. PRATT,

Consulting and Managing Gas Engineer.

Examinations and Reports upon Gas and Electric Properties.
Advice as to Management and Development of Properties.
Properties Purchased.

627-629 Peoples Gas Bldg., Chicago.

ALFRED E. FORSTALL. CHARLES D. ROBISON.

FORSTALL & ROBISON,

ENGINEERING,

In connection with the Design and Construction of Coal Gas Works, Gas Distribution Systems, Electric Light and Power Plants.

Advice as to Operation and Rates of Gas and Electric Properties.

Investigations and Appraisals for Owners or Financial Institutions.

84 William Street, New York City.

HENRY I. LEA

CONSULTING GAS ENGINEER

PEOPLES GAS BUILDING
CHICAGO

Design, Construction, Management, Valuation

J. G. White & Company, Inc.

Engineering, Construction and Operation

—of—

Gas Works, Water Works, Electric Railways, Electric Light and Power Plants, Water Power Developments, Steam Railroads, etc.

Investigations and Reports for Financial Institutions and Investors.

43 Exchange Place, New York.

First National Bank Building, Chicago.

Alaska Commercial Building, San Francisco.

LONDON CORRESPONDENTS—J. G. WHITE & CO., Ltd, 9 Cloak Lane, Cannon St., E. C.

GAS STREET LAMPS

"UNITED" INVERTED

Public Street Lighting our specialty. Absolutely weather proof. Highest efficiency and candle power. One to five mantles.

Correspondence solicited.

ALSO SOLE MANUFACTURERS OF "CODY" INDOOR GAS ARC LAMPS.

UNITED GAS LIGHT AND MFG. CO.
880 Third Avenue, NEW YORK.

Education Publicity
Welfare Organization Work

H. Thurston Owens

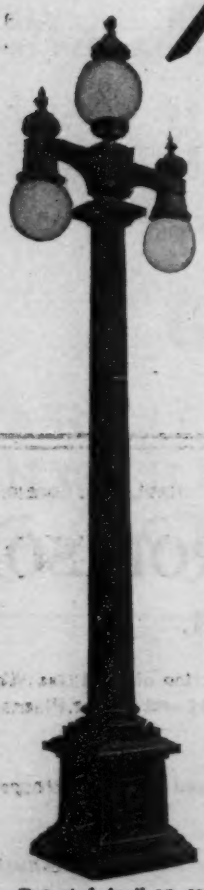
CONSULTING ENGINEER
42 Pine Street - - - - New York City

Our Oxide is made according to specifications that will please you. Write for particulars.

NOW USED IN 176 GAS WORKS.

IRON HYDROXIDE COMPANY,

Benzol for Gas Enrichment. CAMDEN, N. J.



Patented April 25, 1911

"Judge The City By Its Lights"

says a recent writer on advertising questions.

Can your city stand such a judgment? Why not bring it up to the minute with the newest, handsomest street lamps, with the most powerful and brilliant illumination?

"SUN" GASOLABRA

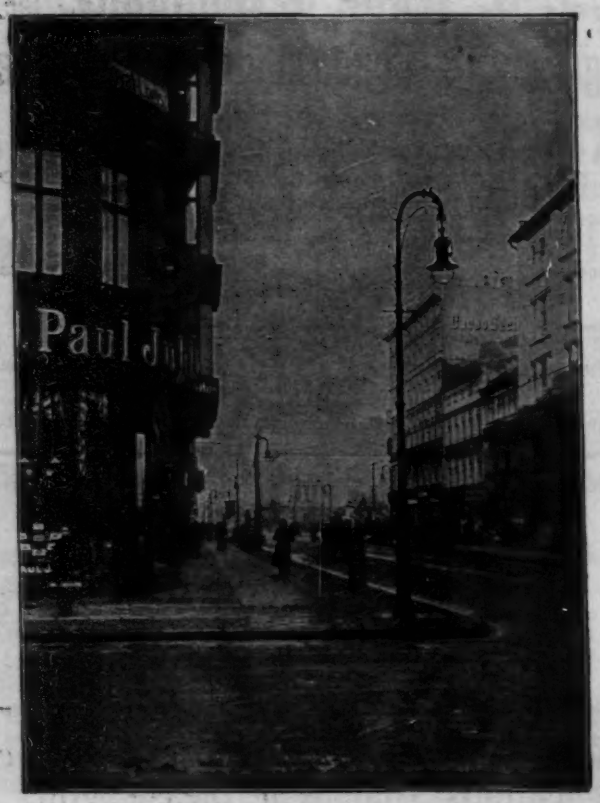
is the lamp you need. Used with either artificial or natural gas. Made with one, two, three, four or five lights to a standard, single or double burners. The 5-light standard, with double burners, will give about 750 C. P. (actual) on artificial, and 1000 C. P. (actual) on natural gas.

If you control the lighting of only one store--one pavement--you can "start something." You can start the other fellows thinking about the "Great Gas White Way" every live city should have.

Write for illustrated catalog of various designs.

THE SUN VAPOR & GAS STREET LIGHT CO.

1376 Market Street, Canton, Ohio, U. S. A.



GRAETZIN ALL OVER THE WORLD.

"GRAETZIN"

Stands for DAYLIGHT at Night

And Saves 40 to 60 Per Cent. of Gas.

"GRAETZIN"

BURNERS FOR ALL REQUIREMENTS AND ALL FINISHES.

"GRAETZIN"

LAMPS FOR STREETS, HALLS, GARDENS AND FACTORIES.

"GRAETZIN"

LAMPS FOR HIGH AND LOW PRESSURE.

Write for Catalogue and Information.

THE AMERICAN GRAETZIN LIGHT CO.

BRIDGEPORT, CONN.

"PENNSYLVANIA GLOBE"

High Pressure.

500 AND 1100-CANDLE POWER LIGHTING UNITS.

After several years of research and experiment, and of over 2 years' actual service, we offer our Pennsylvania Lamp. American built for American conditions.

They will help increase your business. Write us to-day.

PENNSYLVANIA GLOBE GAS LIGHT CO.,
1934 Market Street, Philadelphia, Pa.

BOOKS FOR GAS MEN.

ALCOHOL—ITS MANUFACTURE & DENATURING, by F. B. Wright. Price. $1.

AMERICAN COALS, by —— Nicholls. Price, $2.50.

AMMONIA & AMMONIUM COMPOUNDS by Dr. R. Arnold. 120 pages. Price, $2.

CALORIFIC POWER OF FUELS, by Herman Poole. Price, $3.

CALORIMETRY, by F. H. Bates. Price, $1.

CHEMISTRY OF COKE, by W. C. Anderson. 194 pages. Price, $2.

CHEMISTRY OF GAS MANUFACTURE, by Harold M. Royle, F.C.S. Price, $4.50.

CIVIL ENGINEERS' POCKET-BOOK, by J. C. Trautwine. Price, $5.

COAL TAR AND AMMONIA, by George Lunge. Price, $15.

COKE, by John Fulton. Price, $5.

COKING PRACTICE, by T. H. Byrom and J. E. Christopher. 168 pages. Illustrated. Price, $3.50.

ELECTRIC GAS LIGHTING, by H. S. Norrie. Price, 50 cents.

ENGINEERING CHEMISTRY, by T. B. Stillman. Price, $5.

GAS ANALYSIS, by W. H. Birchmore. 72 pages. Price, $1.25.

GAS ANALYST'S MANUAL, by Jacques Abady. Price, $6.50.

GAS ENGINE, by F. R. Hutton. 543 pages. Price, $5.

GAS ENGINE DESIGN, by Chas. E. Lucke, Ph.D. Price, $3.

GAS ENGINEERS' LABORATORY HANDBOOK, by John Hornby. Price, $2.50.

GAS ENGINEERS' POCKET-BOOK, by Henry O'Connor. Price, $3.50.

GAS ENGINE MANUAL, AUDEL'S. 469 pages. 156 illustrations. Price, $2.

GAS ENGINES AND PRODUCER GAS PLANTS, by R. E. Mathot. Price, $2.50.

GAS, GASOLINE AND OIL ENGINES. Including Producer Gas Plants, by Gardner D. Hiscox, M.E. Price, $2.50.

GAS MANUFACTURE FOR STUDENTS, by John Hornby. Price, $2.50.

GAS POWER, by F. E. Junge, M.A., C.E., M.E. 548 pages. Price, $5.

GOOD ENGINEERING LITERATURE, by Harwood Frost, M.E. 404 pages. Price, $1

HANDBOOK OF COST DATA FOR CONTRACTORS AND ENGINEERS, by H. P. Gillette. Price, $5.

HANDBOOK ON GAS ENGINES, by G. E. Lieckfeld, C.E. Translated by George M. Richmond, M.E. Price, $1.

HANDBOOK OF VOLUMETRIC ANALYSIS, by —— Sutton. Price, $5.

HEAT ENERGY AND FUELS, by Oskar Nagel. 306 pages and 118 illustrations. Price, $3.

LIQUID FUEL FOR MECHANICAL AND INDUSTRIAL PURPOSES, by E. A. B. Hodgetts. Price, $2.50.

MECHANICAL ENGINEERS' POCKET-BOOK, by Wm. Kent. Price, $5.

METHODS OF GAS ANALYSIS, by Dr. W. Hempel. 480 pages. Price, $2.25.

MODERN ILLUMINATION, THEORY and PRACTICE, by Horstmann and Tousley. A Handbook of Practical Information. Price, $2.

MODERN POWER GAS-PRODUCER, by Horace Allen. Price, $2.50.

PEAT, FACTS ABOUT, by T. H. Leavitt. Price, $1.

PIPING AND LIGHTING GAS, by W. P. Gerhard. 310 pages. Price, $3.

PRACTICAL TREATISE ON HEAT, by Thos. Box. Price, $5.

PRODUCER GAS AND GAS PRODUCERS, by Samuel S. Wyer. 295 pages. Price, $4.

PRODUCER GAS PRACTICE, AMERICAN, by Nisbet Latta. 540 pages. Price, $6.

REDUCTION FACTORS FOR GASES, by H. B. MacFarland, M.M.E. Price, $1.50.

SCIENTIFIC MANAGEMENT, PRINCIPLES OF, by F. W. Townsend. Price, $1.50

SELF-INSTRUCTION FOR STUDENTS, Elementary, Advanced, Constructional. Price, each, $1.50.

STEAM BOILER ECONOMY, by Wm. Kent. Price, $4.

TREATISE ON COMPARATIVE COMMERCIAL VALUES OF GAS COALS AND CANNELS, by D. A. Graham. Price, $1.50

AMERICAN GAS LIGHT JOURNAL. - 42 Pine St., New York City.

New 300-Candle Power Unit.

More Gas Street Lighting Made Possible by the New

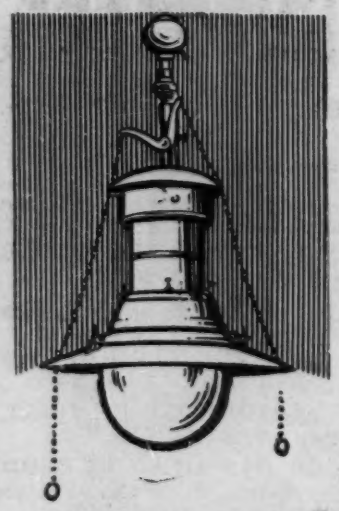
WELSBACH BOULEVARD INVERTED BURNER UNIT.

Fulfills the demand for MORE LIGHT. It is Attractive, Efficient and Practical. Furnished and maintained by the

Welsbach Street Lighting Company of America.

NEW YORK. PHILADELPHIA. BOSTON.
CHICAGO. ST. LOUIS. SAN FRANCISCO.

CORRESPONDENCE SOLICITED.



THE MAGNET---THAT DRAWS THE TRADE

TO ALL SHOW PLACES—IS

LOTS OF LIGHT.

The Welsbach "Multiflex" Outdoor Gas Arc

pulls the people to its side of the street; leads the pleasure-loving, money-spending public to the door.

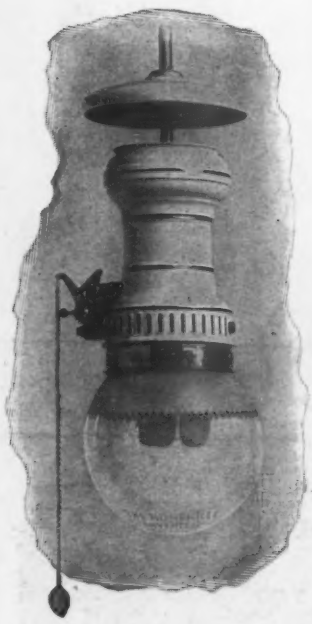
The consumers' window displays talk sales long after shop is closed; amusement places stand out brightly in pleasure-seeking throngs—BECAUSE Multiflex Arcs make daylight-spots of fronts and windows.

By "campaign" methods gas companies are selling and installing thousands of Welsbach Multiflex Arcs. This boosts gas consumption and gas illuminating superiority. Multiflex Arcs mean multiple profits for the gas companies.

Made in three-mantle and five-mantle sizes. Finished in white enamel with gold striping, or in green enamel. Descriptive matter sent on request.

Welsbach Company

GLOUCESTER, N. J.



A Lamp—Plus Service.

Let us impress upon you the fact that a Humphrey Gas Arc Lamp renders an actual SERVICE---a service covering ample illumination, uniformity, proper distribution, the right color values, economy, comfort.

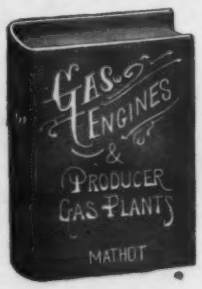
When you are convinced of this yourself, you are in a position to convince your customer---leading to more business for you and for us.

GENERAL GAS LIGHT CO.

KALAMAZOO NEW YORK SAN FRANCISCO

Western Branch Office, 237 Powell St., San Francisco, Cal., C. B. BABCOCK, Manager.

MODERN GAS ENGINES and PRODUCER GAS PLANTS,



By R. MATHOT, M.E.,

Containing a Preface by DUGALD CLERK, F.C.S., Indorsing the Book.

A PRACTICAL Treatise of 320 pages, Fully Illustrated by 175 Detail Illustrations, Setting Forth the Principles of Gas Engines and Producer Design, the Selection and Installation of an Engine, Conditions of Perfect Operation, Producer Gas Engines and their Possibilities, the Care of Gas Engines and Producer Gas Plants, with a Chapter on Volatile Hydrocarbons and Oil Engines.

Price, $2.50. For Sale by

A. M. CALLENDER & CO., - 42 Pine Street, New York City.

FIELD'S ANALYSIS

For the Year 1911.

COMPILED AND ARRANGED BY **JOHN W. FIELD,**

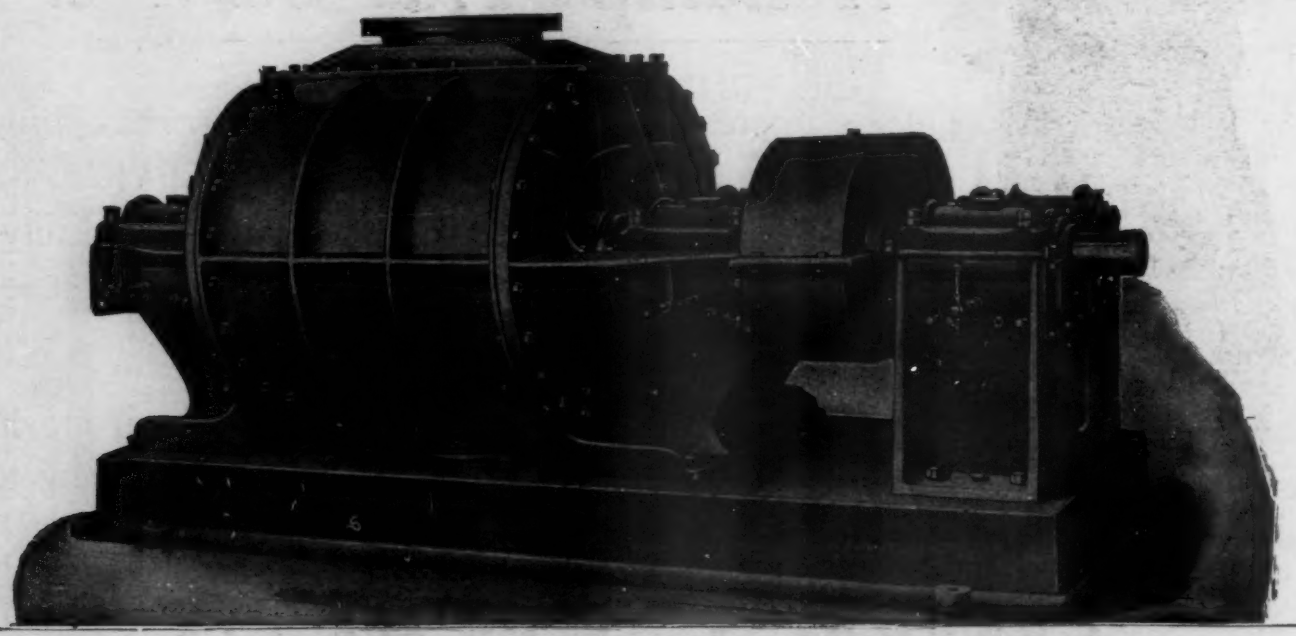
Secretary and General Manager of The Gas Light and Coke Company, London.

PRICE, $5. FOR SALE BY

AMERICAN GAS LIGHT JOURNAL, 42 Pine Street, New York City.

ROOTS' EXHAUSTERS.

A half century of experience, up-to-date engineering and shop facilities embodied in these **World Famous Gas Exhausters.**



High Pressure Machine with Gears at One End and Double Outboard Bearing.

P. H. & F. M. ROOTS COMPANY,

HOME OFFICE: Connersville, Ind. NEW YORK OFFICE: 120-122 Liberty St. CHICAGO OFFICE: 1245-6 Marquette Bldg.

SEND FOR POCKET EDITION OF "ENGINEERS' PRACTICAL REFERENCE BOOK."

Gas Companies

An Industrial Gas Appliance Department Is Most Profitable

Our Specialty is the Utilization of Gas in Mechanical Heating Processes

GAS is not "The Cheapest Fuel," but no other kind of Fuel can be used to such advantage in Manufacturing Processes which require "Precision" in the use of Heat. This statement is confirmed by an experience of over 30 years.

No. 64
Heating Machine

For Tempering and Coloring Steel Work.

Gun Metal Finish on Steel and Iron.

This Machine is practically an improved **"Tumbling Barrel,"** heated with perfect uniformity, the temperature of which can be controlled accurately by the Gas Valve and Air Valve and by reference to Thermometer.

WE WARRANT

all apparatus if we recommend the same for the work specified by the purchaser.

AMERICAN GAS FURNACE CO.

Gas Engineers and Manufacturers

Write for particulars. **24 John Street, New York**

• CAPACITY·IS·THREE·GALLONS·PER·MINUTE·60 •

NATURAL GAS

ARTIFICIAL GAS

Ask your New Business man if he saw

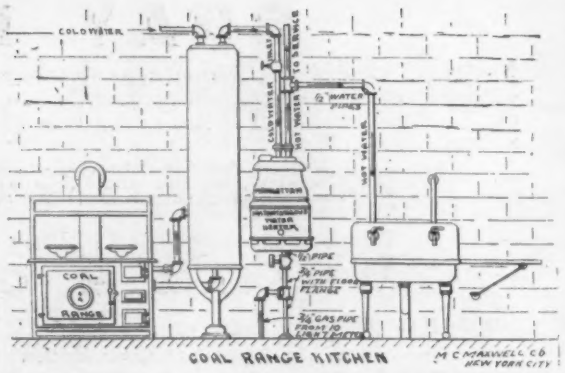
"The Manhattan"

At the Atlanta Show? We were there to "SHOW" him.

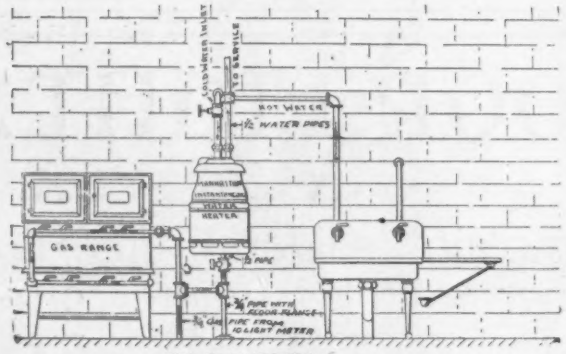
SUCCESS CONSISTS IN DELIVERING THE GOODS.

"The Manhattan"

Is PRE-EMINENTLY SUCCESSFUL. Read the booklet, or if you are not already supplied YOU OWE IT TO YOUR CUSTOMERS.



COAL RANGE KITCHEN



ALL GAS KITCHEN

"The Manhattan" SALES CO. INC. ERIE, PA

HAYS ·HIGHEST·RATE·OF·EFFICIENCY·&·ECONOMY· ERIE, PA

IT IS ABSOLUTELY NECESSARY

that people be reminded continually that you are ready to sell them the things they want. This is a big world, with lots of people in it, and you are easily forgotten if you don't keep buyers posted. What you should do is to tell them about your product to-day, remind them to-morrow, and keep on reminding them thereafter. If you do this, when the buyer is ready to place his order he will remember you. :: :: :: :: :: :: :: :: :: ::

An Advertisement in the AMERICAN GAS LIGHT JOURNAL

is the best and surest means of keeping your name and product before the buyers. :: ::

TEN YEARS' SATISFACTORY SERVICE

IS NO UNCOMMON RECORD FOR

BRAY BURNERS

Union Jet

The Bray Union Jet has received more recommendations from Gas Experts, U. S. Government Inspectors of Gas, and prominent State Inspectors, than any other burner in the world! As an instance consider the definite recommendations in this extract from an annual report of the Public Service Commission for the Second District:

"Metal tips should never be placed on burners, as they waste gas. The conclusion is reached from a study of all the various factors which enter into the ideal burner, and after an examination of the comparative merits, that the BRAY UNION JET IS SUPERIOR FOR GENERAL USES."

When you buy burners, buy BRAY! They are the best—therefore the cheapest.

WILLIAM M. CRANE COMPANY

SOLE IMPORTERS

16-20 West 32nd St., NEW YORK

Pacific Coast Agents, Northwest Gas Equipment Company, Portland, Ore.

Slit Union

POOR LIGHT!

THIS

Complaint seldom refers to burner troubles where companies have adopted

Aluminum-Tipped, Checked Burners.

Write for Samples.

GAS TIP AND SELF-LIGHTER CO.,

149-151 CHURCH ST., NEW YORK CITY.

The "Old Reliable" Water Heater. Known best by the progressive companies.

Made by the World's Standard Makers.

PITTSBURG WATER HEATER COMPANY,

PITTSBURG, PENNSYLVANIA.

And All Large Cities.

The American Practice of Gas Piping and Gas Lighting,

A Treatment for Consumers and Others on Interior Illumination by Gas,

BY WILLIAM PAUL GERHARD, C.E.

CONTENTS.—Chapter I. Prejudices Against the Use of Gas. II. Popular Fallacies About Gas. III. Advantages of Gas as an Illuminant. IV. Advantages of Gas as a Source of Heat and Power. V. The Arrangement of Gas Piping in Buildings. VI. Specification for Gas Piping for Coal or Water Gas. VII. Rules, Tables and Regulations of Gas Companies and of Building Departments. VIII. Piping for Natural Gas. IX. Piping for Air Gas or Gasoline Machine Gas. X. Piping for Acetylene Gas. XI. The Testing of Gas Pipes. XII. Gas Light Illumination. XIII. Gas Burners. XIV. Gas Pressure Regulation. XV. Gas Globes and Globe Holders. XVI. Gas Fixtures. XVII. Gas Meters and Gas Meter Stories. XVIII. The Illumination of Interiors with Gas Lights. XIX. The Lighting of Country Houses. XX. The Relations Between Gas Companies and Gas Consumers. XXI. Practical Hints for Gas Consumers. XXII. Some Facts about the Gas Supply. XXIII. Accidents with Gas. XXIV. Dangers to the Public Health from Illuminating and Fuel Gas. XXV. Dangers of Gas Leakage. XXVI. Historical Notes on the Progress and Development of the Gas Industry. XXVII. Bibliography of Gas Lighting.

310 PAGES. PRICE, $3. FOR SALE BY

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.

R. D. WOOD & CO.,

400 CHESTNUT ST., PHILADELPHIA,

MANUFACTURERS OF

Cast Iron Pipe.

HEAVY LOAM CASTINGS,

Dunham Specials,

Hydraulic Work,

LAMP POSTS, VALVES, ETC.,

Gas Power Plants with Producers.

BUILDERS OF

Gasholders.

Single or Multiple Lifts, with or without Metal Tanks.

PURIFIERS, CONDENSERS, SCRUBBERS, BENCH WORK.

Cutler's Patent Freezing Preventer for Holder Cups.

DIXON'S
SILICA-GRAPHITE PAINT
for
GAS HOLDERS
means
PROTECTION AND DURABILITY.

It has satisfied others:
It will satisfy you.
Won't you let us send
you Booklet 231-B?

JOSEPH DIXON CRUCIBLE COMPANY,
JERSEY CITY, N. J.

Coal Tar and Ammonia,

By GEORGE LUNGE, PH.D. . Third and Enlarged Edition.

Price, $15. For Sale by

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.

NOW ON SALE. NEW EDITION IN CLOTH COVERS.

COX'S LOW PRESSURE COMPUTER, - Price, $2.50
COX'S HIGH PRESSURE COMPUTER, - " 5.00

For Sale by AMERICAN GAS LIGHT JOURNAL,
42 Pine Street, New York City.

IRONCLAD
⊘ Cast Iron, Dry ⊖
Gas Meters

Produce Economy

BY their extreme durability, maintained accuracy, simple mechanism, and sensitiveness on small volumes.

Use "IRONCLADS" only.

Pittsburgh Meter Company

Also Manufacturers of Water Meters, Tin Gas Meters, Positive and Proportional Gas Meters for any pressure, and Meter Provers.

General Office & Works:
EAST PITTSBURGH, PA.

New York
149 Broadway.
Chicago
337 W. Madison St.
Kansas City
6 West 10th St.
Columbia, S. C.
1230 Washington St.
Seattle
115 Prefontaine Pl.
Los Angeles
631 South Spring St.

NOW ON SALE. NEW EDITION IN CLOTH COVERS.

COX'S LOW PRESSURE COMPUTER, - - - Price, $2.50.
COX'S HIGH PRESSURE COMPUTER, - - - - - - 5.00.

SEND P. O. ORDER OR CHECK TO

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.

OUR IMPROVED METERS, REGULAR & PREPAYMENTS,

EMBODY EVERY

DESIRABLE AND ECONOMICAL FEATURE IN GAS METER CONSTRUCTION.

ALSO THE

NEW YORK PREPAYMENT ATTACHMENT, METER PROVERS AND APPARATUS.

ALL MAKES OF METERS REPAIRED AND CONVERTED INTO PRE-PAYS.

New York Improved Meter Co.

306-310 EAST 47TH STREET,

NEW YORK CITY.

THE VENTURI GAS METER

No mechanism in the line of flow.

Occupies little space.

Capacity unlimited.

Continuously indicates and records the rate of flow and registers the total cubic feet.

New Bulletin No. 76 upon request.

BUILDERS IRON FOUNDRY,

Providence, R. I.

METRIC METAL WORKS,

MANUFACTURERS OF DRY GAS METERS.

EXTRA HEAVY TIN METERS AND IRON-CASE METERS

FOR ARTIFICIAL OR NATURAL GAS.

TOBEY CAST IRON NATURAL GAS METERS—METER PROVERS.

WESTCOTT PROPORTIONAL METERS FOR GAS OR AIR.

Special Attention Given to Repairing Meters of All Makes.

FACTORY—ERIE, PA. WAREHOUSE—KANSAS CITY, MO.

EDWARD H. RODGERS, President. FREDK. C. VINEY, Vice-President and Superintendent. JOHN H. BLYE, Secretary and Treasurer.

The Standard Meter Co.

(INCORPORATED),

MANUFACTURERS OF

Natural and Artificial Gas Meters, also Station Meters, Provers, Portable Test Meters, and all other appliances

The Pioneers of Large Capacity Meters for Natural and Artificial Gas.

Office and Factory: 3112-14-16-18-20 North 17th Street, Philadelphia, Pa.

SOLE AGENTS FOR THE MIDDLE WEST: The National Supply Co. of Kansas, Independence, Kas.

PACIFIC COAST REPRESENTATIVE: The W. P. Boardman Co., 718 Mission St., San Francisco, Cal.

D. McDONALD & CO.,

971-997 BROADWAY, ALBANY, N. Y.,

MANUFACTURERS OF

DRY GAS METERS, STATION METERS, PREPAYMENT METERS, METER PROVERS AND GAUGES.

THE GLOVER PREPAYMENT METER,

Simple, Strong, Satisfactory.

THE HINMAN STATION METER DRUM,

The greatest advance that has been made in 20 years in the ACCURATE and ECONOMICAL measurement of gas in large quantities. :: :: ::

NEW YORK OFFICE: 561 West 47th Street. | ALBANY OFFICE: 991 Broadway. | CHICAGO OFFICE: Jefferson and Monroe Streets.

We can meet your requirements for STATION METERS

On all capacities from 1,500 to 500,000 cu. ft. per hour.

One-half the Cost—One-tenth the Space of Old Style Wet Meters.

When in Need of Station Meters Write

ROTARY METER COMPANY,

280 Broadway, NEW YORK.

Our Literature and all information will be sent on request.

HIGH PRESSURE LIGHTING AND HIGH PRESSURE INDUSTRIAL INSTALLATIONS ARE COMING FAST.

We have been making RE-ENFORCED meters for years and guarantee correct registration at any pressure to 30 pounds.

Write for table of volume corrections under varying pressures.

SPRAGUE-METER COMPANY,

BRIDGEPORT, CONN

BRANCHES:

113 Front Street, Davenport, Ia. | 639 South Hill Street, Los Angeles, Cal. | 428 Sutter Street, San Francisco, Cal.

THE C. & T.

COIN REGISTERING DEVICE.

PATENT APPLIED FOR.

This Device Registers Every Coin Placed in the Meter.

WRITE FOR CIRCULAR.

NATHANIEL TUFTS METER CO.,

455 COMMERCIAL STREET, BOSTON, MASS.

"B" METERS "B"

INCREASED CAPACITY. INCREASED EFFICIENCY.

THE MARYLAND METER

PREPAYMENT METERS STATION METERS, METER PROVERS Etc.

PROMPT AND CAREFUL ATTENTION TO ALL REPAIR WORK

CHARLES H. DICKEY & COMPANY.

BALTIMORE.. CHICAGO.

YOU NEED ONE OR MORE OF OUR COMPLAINT METERS!!

METERS, Plain and Prepayment,

For Artificial or Natural Gas.

Repairing All Makes and Attachments Added if Desired.

SPECIAL METERS FOR ACETYLENE.

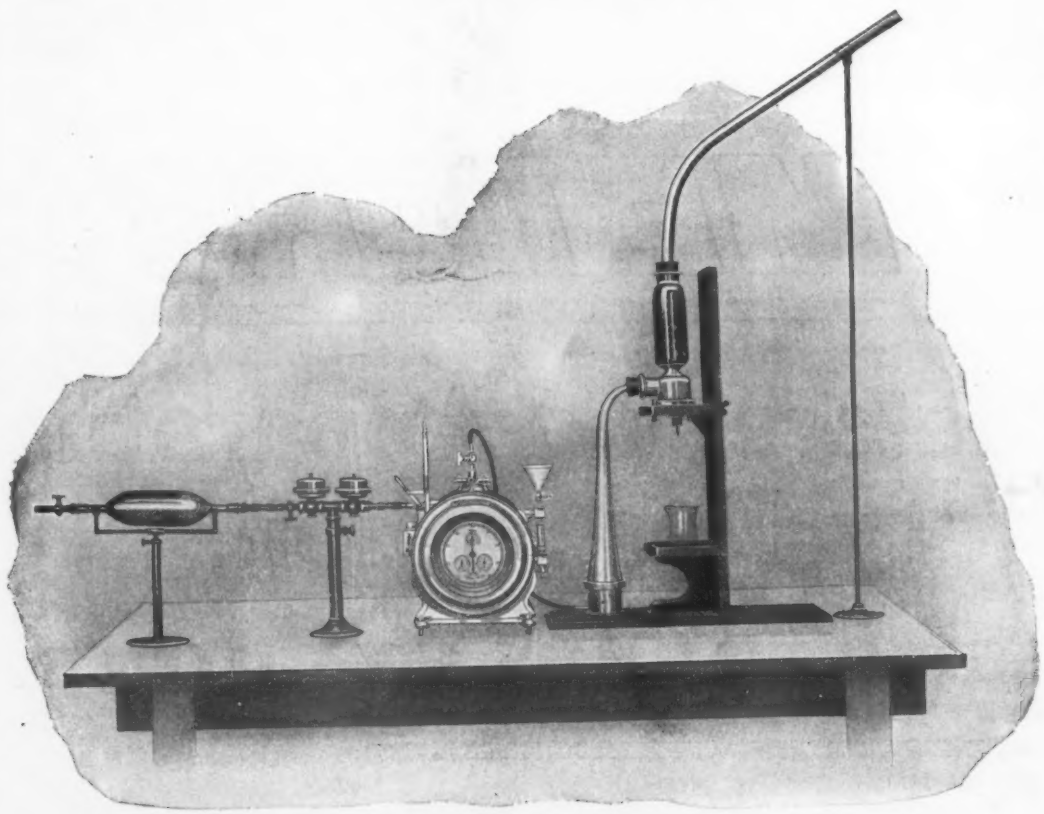
KEYSTONE METER COMPANY,

ROYERSFORD, PA.

NEW YORK. CHICAGO. PHILADELPHIA.

THE AMERICAN METER CO.

ESTABLISHED 1884.



REFEREES' SULPHUR AND AMMONIA TEST.

We are now manufacturing this apparatus in its most up-to-date form.

CATALOGUE SENT ON REQUEST.

THE AMERICAN METER CO.

11TH AVE. AND 47TH ST., NEW YORK CITY.

HELME & McILHENNY,

Established 1848. 1339 to 1349 Cherry Street, Philadelphia, Pa.

Wet and Dry Gas Meters, Station Meters, Provers, Gauges, Etc.

METERS REPAIRED

PREPAYMENT GAS METERS.

Our Own Patents. Strong. Simple. PROMPT ATTENTION. CORRESPONDENCE SOLICITED.

THE FOULIS GAS GOVERNOR.

BROWN'S DIRECTORY OF GAS COMPANIES, 1912.

PRICE, $5. For Sale by

AMERICAN GAS LIGHT JOURNAL, 42 Pine St., New York City.

JOHN J. GRIFFIN & CO.,

1513 TO 1521 RACE STREET,
PHILADELPHIA.

559 West 47th Street,
NEW YORK.

Jefferson and Monroe Streets,
CHICAGO.

GAS METERS,

Station Meters and Apparatus of Every Description.

REPAIRING CAREFULLY DONE.

THE POSITIVE PREPAYMENT METER.

MORE THAN

ONE MILLION ARE IN USE

IN THE UNITED STATES AND THE DEMAND IS STEADILY INCREASING.

If you have some ordinary meters to be repaired, send them to us and let us repair and convert them into prepayment meters. They will be a source of satisfaction and profit to you.

SEND FOR OUR CATALOGUE AND OUR PREPAYMENT BOOKLET.

LB S '14